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OUR SUPPLEMENT

In the world of osteopathic editors, new tones are struck by the appearance of original research. For this reason we point with pride to the lead article in this Supplement.

Spaeth and Kurschner have made a definite, although small, contribution to the accumulation of knowledge in the field of pediatrics. Theirs is a step in the right direction and demonstrates conclusively what can be done, even with limited resources and where busy pediatricians are expected to do the work. We commend these authors and hope that coming years will produce even more original work from them and other members of our profession.

In addition to this fine article, there appear in this Supplement two papers directly concerned with osteopathic manipulative therapy. One stresses the importance of the cranial factors in the young infant and the other expounds a clear, understandable approach to rational manipulative therapeutics in children.

Most of the papers from the Pediatrics Teaching Session of the 1948 Convention of the American Osteopathic Association are being published in this section for those who were unable to hear them at the meetings. They are part of the symposium on the newborn infant and cover such topics as jaundice, cyanosis, birth injuries, normal feeding, diarrhea, and immunization.

The remainder of the articles in this Supplement were those submitted directly to us or presented at meetings other than those mentioned. To the authors, we are grateful for their cooperation. We trust that they will continue to further the written word of osteopathic pediatrics and that to their number will be added others anxious to advance the field. In this way, chiefly, will we be able to point to our accomplishments and make known our achievements. To this may be added the parenthetical thought of the editor that perhaps this would enable us to produce for the profession more than just one supplement each year.

A. M.

GRADUATE PEDIATRICS

Graduate education in osteopathic pediatrics until 2 or 3 years ago was limited to those convention programs which included a few talks on the care and diseases of children.

Today, the profession has sufficiently advanced that this is no longer the case. One of the initial steps was taken in California in 1947 when the Graduate School of the College of Osteopathic Physicians and Surgeons offered a 4-week course in pediatrics. It was well attended and enjoyed. Then, the Philadelphia College of Osteopathy began its year-long one-day-a-week training program in pediatrics which is providing training for men and women on the East Coast.

This summer in Philadelphia there will be offered a 1-week course, full time, in Pediatric Cardiology, the first time that such specialized graduate study has been offered by our profession.

We have truly come a long way, and there is still quite a way to go.

Part of this progress will be reflected in the program being organized for the 1949 Convention of the American Osteopathic Association. The Pediatrics Teaching Sessions will provide a complete study of the problem of congenital heart disease in children, and will bring together pathologists, radiologists, and surgeons, as well as pediatric clinicians. Advance information suggests that an informative, worth-while symposium awaits those who will be in St. Louis in July.

A. M.

Effect of Age on the Squeezogram

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Recently Cohen and Dancis[1] described a simple mechanical device to record the severity of the movements in choreic patients. They called this apparatus the "squeezogram." It consists of a soft rubber bulb connected to a recording tambour by means of a rubber tube. Pressure changes on the bulb are transmitted to the tambour and thus recorded on a smoked drum.

The test is conducted in a quiet room where only the patient and the observer are present. All distracting objects must be removed. A straight line is drawn across the smoked drum and the pointer of the tambour is placed about 1 cm. under that line. The patient is then instructed to squeeze the rubber bulb until the pointer is brought up to the base line and to maintain it at that level. The kymograph is set in motion at a moderate speed.

Using this apparatus, Cohen and Dancis were able to record objectively the severity and course of chorea. They also noted that the tracings obtained with neurologic patients characterized by involuntary movements of the hands, were different from those of choreic subjects. Parkinson's disease, for example, is characterized by fine and regular movements, whereas chorea is characterized by course, irregular, and uncoordinated movements.

We became interested in the squeezogram and on testing a few neurologic patients found the report of Cohen and Dancis apparently substantiated.

The question arose, however, concerning the reliability of these tests in young children. How old must a child be before one can depend on his understanding and his performing a test of this nature? No answer was reported by Cohen and Dancis, who apparently worked on older children. With this question in mind, 200 healthy children were selected from the wards and clinics of the Osteopathic Hospital of Philadelphia as well as from among private patients. The ages of these children ranged from 3 to 10 years. They were tested with the squeezogram in the manner described above.

EXPERIMENTAL RESULTS

The first group consisted of 35 children under 5 years of age. Thirty-one of these produced irregular tracings which could be mistaken for choreic graphs (Fig. 1: a and b). The remaining 4 were of higher intelligence than the others and, as could be expected, the tracings obtained from them were fairly regular. A typical tracing of a child of this age group can be seen in Figure 1 c.

In the 5 to 6 year age group, 112 patients were tested. Seventeen of these children made consistently irregular curves, 21 produced consistently straight tracings, and 74 varied their performance from day to day. The majority were sufficiently advanced to cooperate and their tracings were more or less regular, although the slightest distraction resulted in a loss of attention. Typical tracings of this age group are shown in Figure 1: d and e.

Fifty-three of the subjects were from 6 to 10 years old and were of average intelligence. These children produced straight tracings in every case Fig. 1: f and g.

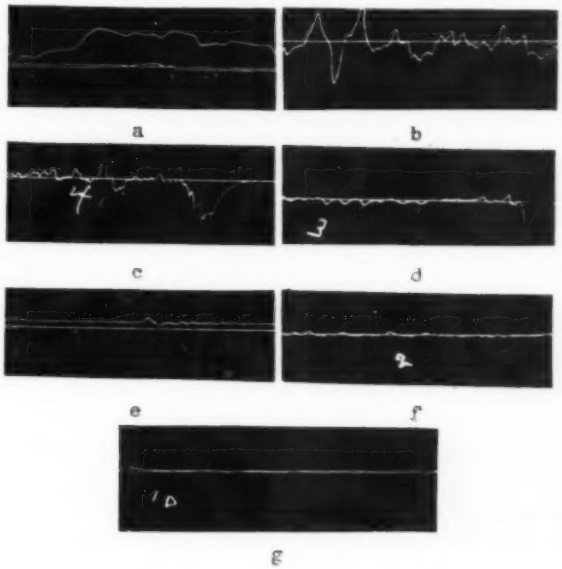

Fig. 1. Squeezogram tracings: a and b—9 year-old patients with chorea. c—3 year-old normal child. d—5 year-old normal child. e—6 year-old normal child. f—7 year-old normal child. g—10 year-old normal child.

CONCLUSIONS

The squeezogram seems to be a useful apparatus for testing the severity and course of chorea in children above 6 years of age. In 5 to 6 year-old patients, these tests are not very reliable as far as the severity of the disease is concerned, but the course of the condition may be shown. For children under 5 years, the squeezogram seems to be worthless.

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Through the Cranial Base*

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Speransky's[1] book, "A Basis for the Theory of Medicine," was written after 26 years of research to prove the importance of the nervous system in disease and the maintenance of health.

In describing the effects of a segmental osteopathic lesion the description often falls far short of accuracy because a fact of tremendous significance is overlooked or not understood. This fact we can better appreciate in considering Speransky's statement that, *"The nervous system is an organ which cannot be altered locally.* Local interference affects the whole nervous network; these changes pass away gradually and not completely and give rise to a number of adaptations to the new artificial norm. The nervous system is a new object after the local lesion and it reacts to stimuli in a new fashion."

We know full well that the system least developed in the newborn is the cerebrospinal. For 15 to 20 years pediatricians have given much thought to the development of various systems. Certain supplementary foods are added at definite intervals to provide the stimulation necessary for furthering the secretion of various digestive ferments as the organism develops toward their possible secretion; and also added are necessary elements to assure optimum growth and to replace those which have been stored during fetal growth and subsequently used.

There is need to consider much more in the newborn than its ability to cry, to breathe, and to eat. These little scraps of humanity will be the men and women of tomorrow. Many die by the wayside and of those surviving it is said that 25 per cent carry the world. It is indeed a small percentage that completely overcome the fact that they were born.

We have osteopathically the most efficient means to assure the greatest possible development of the cerebrospinal system. Consider the structure in which it is housed, the craniovertebral cavity, and the immaturity of this structure in the neonatal state.

Embryologists have explained that early in development, membrane encases the cerebrospinal system. They have described the development of the rostral end of this system, the pressure of which, according to Murray,[2] is responsible for the appearance of ossification areas that further develop the membranous vault which in turn influences the direction of growth of the cerebral hemispheres.

Andrew Taylor Still described the brain as the "dynamo of life" and admonished: " 'Let your searchlight always shine brightly on the brain.' On it we must depend for power."[3] The brain stem and diencephalon, containing all primary centers, are necessary for life but the neopallium which is still very much in the process of development at the time of birth continues to develop long after other systems have reached their peak of maturity and are on the decline.

To ensure life with all its strength it seems a wise precaution to be sure that the brain stem and diencephalon are not receiving undue crowding and to remember that the newborn is most fearfully at the mercy of those helping it into the world and caring for its early years. What a responsibility rests with those assuming these duties! So often, probably most often, at this time is set the destiny of a human being, for at this stage the individual may be encumbered with limitations which will place him among the 75 per cent of survivors referred to above or he may have freedom allowing optimum development which will allow him to find himself eventually among the 25 per cent who carry the world.

Much has been written upon various physical and mental handicaps. The myriads of borderline states that are considered and mentioned, and which constitute a tremendous economic waste in human ability, in so many instances could have been prevented and in so many more corrected during the early years of life. Unsightly misshapen skulls were mentioned by Hippocrates, who considered them to be constitutional anomalies, and so through the years they were variously considered until in 1851 Virchow[4] classified various mental states according to the premature synostosis of the cranial bones.

In the latter part of last century and the beginning of this there were various attempts made to overcome the odd cranial patterns of the newborn attributed to moulding, but too fantastically abnormal for Nature to return them to acceptable limits. The various attempts described in literature were discarded as being of no help in the prevention of the development of the dreaded symptoms anticipated as a result of difficult delivery or strenuous labor.

The cranium of the newborn is very immature in its bony structure. At this stage of development the intracranial membranes are ascribed the function of protecting the developing brain during the stresses and strains of labor and delivery. During the last weeks of pregnancy the fetus is subjected to compressive forces, those due to uterine contractions and those due to resistance of maternal pelvis and perineum. During labor these forces are increased and the fetal skull experiences extreme pressure exerted through the spine upon its base. During every stage of delivery there is alteration of the planes of stress throughout the fetal cranium.

The base of the newborn skull is almost flat, and the bones having been laid in cartilage are in several parts. The portions of the occipital bone and of the temporals are of greatest osteopathic cranial concern at this time. The occiput consists of four parts, a basilar, two condylar, and a squamous portion, all surrounding the foramen magnum. Much has been observed over a period of several years concerning the serious malalignment of these portions as an effect of difficult delivery. The crowding of these parts has been described as diminishing the foramen magnum and crowding the contents thereof, and the squama may be torn from the condylar parts and crowded under or over them.

At autopsy the medial approximation of the condylar parts has been observed, also the caudad inclination of the posterior aspect of the basilar portion, and the cephalward protrusion of the odontoid process of the axis against the medulla. This latter misadventure has been described in previous literature, and the possi-

*Presented at the Annual Meeting of the Osteopathic Cranial Association, Boston, July 18, 1948.

bility of such an occurrence is not too remote for infrequent repetition. On one occasion a considerable amount of time was spent on such a case in the Osteopathic Hospital of Philadelphia in the attempt to retrace the possible mechanics for the production of such a mishap to the cranial base and the means whereby it could be corrected. The details of this were relayed to the obstetrician whose case it was. Within 2 weeks he conducted another delivery with every semblance of duplication. On this occasion he immediately considered the infant, and corrected the malalignment of the base, thus relieving the mechanical pressure crowding the medulla. The baby according to last reports was entirely normal.

It is obviously only after delivery that these effects of stress are discernible and they vary in degree according to the amount and rate of forces at any given time, as well as their direction according to the position of the head and its degree of asynclitism. The effect of stress is evidenced in moulding or alteration in the shape of the head. This is resisted by the septa of the dura mater which become tensed and stretched and altered in their relative positions.

It is supposed that during delivery there is a natural moulding of the fetal cranial bones to help reduce the size of the cranium and thus facilitate a less strenuous passage through the birth canal. The forcing of fluid out of the skull also furthers cranial reduction. But all too often on account of slight or great injury to the mother during her developing stage and the conformity of her habits to the dictates of civilization, the birth canal does not develop as Nature intended, so it is very probable that most small craniums receive far greater trauma during birth than should be experienced.

In an article entitled the "Destiny of Man," Win-Brooks[6] refers to the wonders of Nature which have existed for centuries, unknown to man, and which upon becoming known, have been little understood. The writer cites the electric eel, capable of killing and cooking its food, and the marvels of radar upon which the bats, from beginning of time, have depended for guidance and preservation of life during flight. In conclusion this article mentions the very meager development of the human brain, the tremendous potentialities of which are so far beyond the comprehension of the present age.

With this thought in mind, consider the developing brain of the newborn and the possibilities of its greater development under conditions free from hindering interferences and restrictions of mechanical nature, which in turn, would eliminate many of the chemical deterrents.

However, with increasing obstacles due to abuse through ignorance or careless disregard of the laws of Nature, there is a compensating increase of knowledge in the scientific world. Necessity is indeed the mother of invention. William G. Sutherland[6] has taught consideration of the dural reduplications as reciprocal tension membranes, the forces of which are used in normalizing the fluctuation of the cerebrospinal fluid and the equalizing of its cisterns and in the osteopathic correction of cranial lesions.

The shape of the newborn skull and the degree of alignment of the various portions of the base, which are largely responsible for the compensating changes in the contour of the vault, are both influenced by many factors: First the health of the mother, then the position of fetus in relation to the placenta, the maternal spine, and its degree of lordosis, and the inclination of the maternal sacrum as well as the contour of the rest of the bony pelvis. Also of quite great importance is the innervation of the uterine musculature determining the degree of evenness of its contractability. According to the work of Murray,[2] ossification in the flat bones occurs first where there is greatest pressure; this together with the aforementioned facts concerning the growth lines and the sutural lines will help to account for the asymmetry observed in many specimens.

As already stated the forces of labor are directed through the fetal spine to the base of the skull, the occiput at this stage being in four very easily movable parts. We have followed in obstetrical literature and have observed most clearly at autopsy the way in which the condylar parts may be approximated posteriorly or crowded anteriorly into the basilar portion. The squama may be flexed at a greater degree at the hinge or rotated to one side inclining both condylar parts toward that side. Depending upon the degree of asynclitism of the infant skull enduring these forces, there are variations of planes and direction of the condylar parts, one being much more caudad than the other. Add now the picture of these membranous attachments and the resultant obliquity of the reciprocal tension membranes. The immature brain, which is of a very soft consistency, must accommodate itself to the strange contorted shape of the structure in which it is housed. In the chapter on cerebral palsy in Grinker's[7] neurology there is a picture of a cross section of the cerebellum and pons, showing a very displaced central canal, the general structure being extremely unsymmetrical. In disturbances involving this area it is believed that there are symptoms of ataxia and incoordination of cerebral palsy. Remembering the strains that may be directed through the stress fibers around the basal ganglia some reason may be seen for their involvement with the resulting athetosis and also because of the strains crowding the motor cortex there may be spastic symptoms.

These symptoms may not be observed immediately, not because the cause is absent, for there is often the history of fretfulness and difficulty in feeding to indicate the presence of trouble. However, the progression of disability may be erroneously concluded because the symptoms only become evident as development has progressed to the level where manifestation of the symptoms is possible; as increased muscular accomplishment is expected with advance in age, it appears that the child is becoming progressively worse.

It was interesting to read in Grinker's[7] text that hemorrhage of the newborn is not necessarily responsible for cerebral palsy. Grinker speaks of the brain usually being small and shrunken with obvious defects of the individual gyri. Does not the cranial concept give cause for such findings? It was long believed that hemorrhage was the cause of cerebral palsy but many investigators have found no evidence of hemorrhage. Little,[8] who in 1843 described severe spastic states resulting after prolonged or difficult labor, nearly 20 years later in 1862, stated that not all such cases were due to hemorrhage.

The results of osteopathic cranial therapy in the case of the birth-injured child are very gratifying: the younger the individual when treatment is initiated

the more completely is the handicap overcome. There are many exercises which must be carried on daily at home for the development and education of muscles as their respective nerve pathways are able to function. This type of handicapped individual has never experienced normal sensations.

In the very severe cases it is much more effective to have the home exercising preceded by hot packs to ankles, knees, groins, and low back according to the indications for the particular case. In young children with very severe cases much depends upon the persistence of cooperation from the parents. The older and more intelligent the victim of this handicap, the more cooperation is obtained from the patient himself, and in dealing with these patients, it is soon learned that no one works so hard for so little gain as a cripple.

Upon examining a very young infant it is impossible to prognosticate whether a life of freedom from all maladies lies ahead or whether the pattern of some severe involvement has already been set. This, because of osteopathic principles, we do know: If the entire human mechanism is restored to as nearly normal as possible and so maintained, there is a greater probability of reducing the undesirable patterns and thus averting their dreaded manifestations. As Dr. Still wrote, "To find health should be the object of the doctor. Anyone can find disease."[9] In a previous paper[10] on the occipitosacral syndrome and its developmental anomalies there were described osteopathic lesions as possible predisposing factors in segmental disturbances responsible for many human maladies.

It has been very interesting to note that some babies treated immediately after birth for very severe cranial conditions and observed during the first year or two of life have progressed more rapidly both mentally and physically than those presenting no difficulties and receiving no such treatment. In dealing with this facet of life the pertinence of the thought expressed by William Woodward becomes apparent, "The turning points of lives are not the great moments. The real crises are often concealed in occurrences so trivial in appearance that they pass unobserved."[11]

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The Effects of Maternally Administered Drugs on the Fetus and the Newborn Infant

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Early literature on the subject of placental permeability is exceedingly scanty. The first work of this character was published by Mayer[1] who in 1817 proved the passage of cyanide of potassium. In 1909 Nicloux[2] summarized the knowledge available on the subject and mentioned iodide and bromide of potassium, phosphorus, the salts of mercury, copper, arsenic and lead, carbolic acid, sodium salicylate, quinine, morphia, urea, and others.

The scarcity of work on the subject is due, no doubt, to the difficulty involved in conducting these experiments on living persons. The simplest procedure consists in administering to the mother during pregnancy those substances being considered and in finding the same substances in the fetus upon birth. This will, of course, prove only that a certain substance passes through the placenta but it is not apt to show in what manner and when the substance passes through. Real comparative values concerning the chronology of interchanges between mother and fetus can be obtained only by repeated examinations of both the maternal and fetal blood in one and the same individual. The difficulties involved undoubtedly explain the differences in opinion found in the literature.

The data which Beck[3] has collected from the literature show that the placenta permits the passage of a large number of organic and inorganic substances. It may be asserted in a general way that the placenta permits the passage of most alkaloids. The reason is that alkaloids are lipoid soluble. In regard to heavy metals, it seems certain that they can pass through the placenta only if it is altered pathologically and if there exist lesions of the chorionic epithelium.

Although the placenta is generally regarded as an efficient barrier against the transmission of bacteria, observations have shown that a great number of bacteria pass from mother to fetus.[3] The placenta shows but little permeability for bacterial toxins, but it is certainly permeable to antitoxins. The marked passive immunity of the newborn to a whole series of infectious diseases shows plainly that antitoxins pass through the placenta, but the transition of the antitoxins is slow according to Nattan-Laurier and his coworkers.[4]

It is not clear in what manner agglutinins and hemolysins, some of which are highly molecular, pass through the placenta. The experimental results suggest that their passage occurs only in the presence of lesions in the placenta, but this is not certain.

Studies in 1943[5] showed that the sulfonamides pass readily across the placenta into the blood stream of the fetus and into the amniotic fluid. This has been demonstrated with sulfanilamide, sulfathiazole, and sulfadiazine. In cases of premature rupture of the membranes the presence of an adequate sulfonamide concentration in the amniotic fluid could serve as a first line of defense as a protective agent. Also in cases of gonococcal infection of the maternal genital tract a concentration of sulfonamides in the fetus prior to delivery would seem to serve as a prophylactic measure

against gonococcal ophthalmia. However, indications rarely rise for prolonged sulfonamide treatment during pregnancy and until such administration of sulfathiazole and sulfadiazine have been proved to be equally safe for the human fetus and the mother, it might be well to bear in mind the possible hazards to the fetus from prolonged exposure to these drugs in utero. Recently the transmission of penicillin to the previable fetus has been reported and its significance in relation to congenital syphilis discussed.[6]

According to Holt[7] a number of drugs may be eliminated in human milk, particularly after administration of full doses or for a prolonged period. Atropine, many opium derivatives, mercury, lead, arsenicals, salicylates, iodides, bromides, and some of the alkaloid cathartics have been found in the milk, sometimes in sufficient quantities to produce symptoms in the infant being nursed.

According to Grulee and Eley[8] breast milk frequently contains drugs which have been taken by the mother. This is true of alcohol only if it has been taken in rather large amounts. Most drugs if taken in small amounts do not appear. However, cathartics do in most instances. Bromides and barbiturates are also commonly found and may be the cause of rashes and conjunctivitis in the nursing baby.

Holt[7] states that the milk of a woman suffering from toxemia of pregnancy may be toxic to the infant. Occasionally bacteria may be found in the breast milk; chiefly they are cocci from the external milk ducts and are of no importance. Pathogenic bacteria may be found in the milk in mastitis. In septicemia pathogenic organisms may reach the milk even in the absence of mastitis.

Animal experiments have shown that diphtheria antitoxin is regularly found in the milk. The Widal reaction has been produced with human milk and with the blood of the healthy infants receiving it. It is probable that other antibodies are conveyed to the infant through the milk. However, this mechanism does not explain many of the phenomena of immunity in the newborn infant. A possible protective mechanism in the newborn is passive protection from antibodies received in the mother's milk. Theobald Smith[9] demonstrated that colostrum of cows contained antibodies of importance in preventing colon bacillus of calves. Although antibodies of various kinds have been demonstrated in human breast milk, they do not appear to survive the process of digestion.

Allergic manifestation may occur in the nursing infant, presumably as a result of small amounts of foreign protein transmitted through the milk. Usually the mother is insensitive to the offending substance. Such instances are, however, very infrequent. A case is cited in which an infant developed angioneurotic edema due to the ingestion of navy beans and sweet corn by the mother. This cause was proved by alternate giving and withholding of the offending foods from the mother.[7]

A little off the subject, but related to it, is the effect of nervous upsets of the mother on her milk. This effect which is very striking, and more important than diet, affects both quantity and quality. Fright, grief, passion, excessive sexual indulgence, or any great excitement may entirely arrest the secretion of milk or may so alter it as to make the child acutely ill. Worry, anxiety, fatigue, or any prolonged nervous strain may also cause disturbances.

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REACTIONS TO PERTUSSIS VACCINE

Until recently, pertussis vaccine has been considered innocuous, but some months ago reports began to appear of irreversible changes following its injection. John A. Toomey, M.D., sent a questionnaire to a large number of pediatricians, physicians who had published articles on pertussis, and other physicians to obtain information on reactions to pertussis vaccine; specifically, he tried to obtain answers to the question, "Did the patients have convulsions after vaccination?" He summarizes the data obtained and the obvious conclusions to be drawn from them in the *Journal of the American Medical Association*, February 12, 1949. At least 38 well authenticated cases of convulsions were reported, but there appeared to be no feature common to all cases. In one series fluid toxoid was used in most of the cases with reactions. There also seemed to be a disproportionately large number of cases reported from the East and Midwest, but this fact may be due to incomplete reporting from other parts of the country.

The reactions may have been (1) constitutional reactions occurring in the patients themselves, (2) immediate reactions to the vaccine by intravenous injection, (3) antigen-antibody responses to previous specific sensitization, (4) reactions due to pyrogens, or (5) reactions due to damage to cerebral vessels from pertussis toxins. None of these types could be completely excluded from consideration, but none could account for all the cases.

From this study, Toomey concludes (1) that no child should receive injections of pertussis vaccine in large amounts (40 billion organisms, double strength) who has a family or personal history of convulsions or an illness of any kind, particularly if it is in any way related to the central nervous system; (2) that if there is any doubt a smaller dose should be used; (3) that every apparent reaction should be reported and complete data should be kept by the physician; (4) that perhaps the United States Public Health Service should standardize vaccines both for potency and for aging; and (5) that there have not been enough serious reactions reported to justify discontinuance of the use of pertussis vaccine.

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Recent Advances in the Acute Diseases of Childhood*

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It behooves osteopathic physicians to take recourse to the various parenteral means of provoking antibody response. It is unfair to the child to withhold procedures that have repeatedly been proved to be protective against the various diseases for which they are used, especially when they are practically noninjurious to the child and produce minimal discomfort. This paper will deal solely with the production of immunity to various diseases by the injection of the vaccines, toxoids, and antitoxins.

It has been assumed for years by a great many physicians and almost the entire lay population that any infant is immune to certain, if not all, of the acute infectious diseases for the first 7 or 9 months of life. This is true only if the mother had the antibodies in her blood during pregnancy. Lack of immunity in a mother is reflected in a corresponding lack of immunity in her baby.[1]

Placental transmission of antitoxins and antibodies has been repeatedly shown. It has been recognized for some time that the antitoxins of diphtheria, scarlet fever, and tetanus are equal in the blood of mothers and newborn babies.[2,3] The antibodies against poliomyelitis[4] and virus diseases[5] have been transmitted from mother to fetus. Antistreptolysin,[6,7] staphylococcic antitoxin,[8] and pneumococcic antibodies[9] gain entrance to the fetal circulation if present in the mother's blood.

That immune bodies will only be present in the baby's blood if they are present in the mother's blood was more recently shown by Adams[10] who took 142 pairs of antepartum and cord blood specimens and found that in 77 per cent of both Hemophilus pertussis antibodies were entirely lacking. Whatever immunity an infant has is passive and depends entirely upon the antibodies present in the mother's blood.

Twenty years ago it was believed that from 80 to 90 per cent of adults were immune to diphtheria[11] and consequently 80 to 90 per cent of babies likewise were immune. However, recent studies have shown that but 50 per cent of adults are immune nowadays.[1,12,13] This increase in the percentage of adults susceptible to diphtheria is explained on the basis of lack of contact with the diphtheria bacillus. As a result of generalized prophylactic immunizations against this disease in the years gone by there has been a marked decline of diphtheria and individuals have not come in contact with the disease. Artificial immunity depends upon periodic stimulation to maintian the immune response. In view of this marked change in the status of adult susceptibility to diphtheria it becomes important that Schick tests be made with greater frequency and most certainly in the pregnant woman. In the event that she is not immune proper steps can be taken to develop her immunity and protect her baby until it is old enough to receive its own immunization against such a serious disease.

Whereas the Schick test has made it possible to evaluate susceptibility of diphtheria for the past 25 or 30 years, it has only been recently (within the past 6 years) that accurate data have been collected showing that only 15 to 30 per cent of adults have protective antibodies against pertussis,[14,15,16] an equally serious disease in infants.

METHODS

Diphtheria, Pertussis, Tetanus. — Originally, it was customary to use individual vaccines for the purpose of immunizing against each disease, much to the distress of the baby and parents. In the past few years it has been amply shown that there are no contraindications to the use of mixed vaccines. The reactions to combinations are no more severe than to the individual preparations and the immunity response is equally as effective.[10,17-22] Hence, it is customary at present to use one of the various forms of triple vaccine (diphtheria, pertussis, and tetanus). Tetanus vaccine is included with the diphtheria and pertussis vaccines for several reasons. Though tetanus is not a particularly common disease in infancy its frequency increases as the child grows older and once the child has been immunized its antibody titer can be maintained at a high level by booster or recall injections and protection against tetanus thus provided; second, there are no naturally immune persons; and third, the inclusion of tetanus with pertussis and diphtheria vaccines does not affect the baby adversely in any way.

Whether one uses fluid toxoid (triple), alum precipitated toxoid (triple), or aluminum hydroxide adsorbed toxoid (triple) seems to be of little importance provided the injection is given deeply subcutaneously or intramuscularly and with the needle free of any material on its tip. Since 90 to 100 billion killed Hemophilus pertussis organisms are necessary to produce adequate protection,[1,21-23] the individual preparation should be checked to be sure that, at the completion of the injections, the child has received the required number of organisms. If not, an additional 1 cc. of some single pertussis vaccine should be given to insure adequate protection.

The preferred age at which to start the immunization is 6 months,[24,25] at which time 1 cc. is given deep in the deltoid area. At 7 months of age another cc. is given in the opposite deltoid area, and a final cc. at the eighth month in the biceps or triceps area of the arm where the first injection was given.

Five to 6 months following the last injection, a Schick test should be performed. If positive, two injections of diphtheria toxoid, alum precipitated, should be given with a 6- to 8-week interval between the two injections. Six months following the last injection another Schick test should be performed.

If the first Schick test is negative nothing further is done until from 9 months or a year following the initial immunization, at which time an injection of 1 cc. of triple vaccine should be given as a booster or recall injection.

Pertussis.—Each year following the single recall injection of triple vaccine, 1 cc. of pertussis vaccine should be given as a stimulating injection to maintain a high titer of pertussis antibodies. This yearly booster injection should be given until the child is 7 or 8 years of age. Two facts should be borne in

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mind about pertussis vaccine: (1) It has no therapeutic value and (2) starting immunization against pertussis during an epidemic or following an exposure will be of no avail for those exposures per se, because it takes 6 or 8 weeks following the injections to develop immunity.[12,26] However, following the initial immunization procedure, the response to a stimulating injection of 1 cc. of vaccine is very prompt.

Therapeutically, hyperimmune vaccine is helpful.

Tetanus.—A year following the single recall injection of triple vaccine mentioned above and once each year thereafter 0.5 cc. of alum precipitated tetanus toxoid should be given for many years. In addition 1 cc. of fluid toxoid should be given at any time that there is a potential tetanus invasion; in this instance fluid toxoid is believed to be better since it stimulates antibody production more quickly than the alum precipitated toxoid.[25] However, the alum precipitated toxoid may be better for the yearly booster injection because of its slower and more prolonged action. The above regime is believed to be sufficient protection against the development of tetanus in all except massive or extensive dirty wounds. In situations where there is a potential massive tetanus infection, from 1500 to 2000 units of the tetanus antitoxin (horse serum) should be given in one arm and 1 cc. of toxoid in the other.[25] This latter procedure is deemed advisable since it is not known how much antitoxin in the circulating blood is necessary to protect against tetanus.[21]

Diphtheria.—Following the stimulating injection of 1 cc. of triple vaccine 1 year after initial immunization, nothing further need be done until the child is about to go to school, at which time another Schick test should be performed. If this is positive a single injection of fluid or alum precipitated toxoid should be given as a stimulating injection. A word of caution might well be added here—no individual over 10 years of age should ever be given a booster or recall injection of diphtheria toxoid, fluid or alum precipitated, until first tested intracutaneously with a diluted form of the toxoid. A small percentage of older children and adults develop a sensitivity to the protein of the diphtheria bacillus. Hence, before any form of diphtheria toxoid is used in these older individuals, they should be given 0.1 cc. intracutaneously of a 1:10, 1:20, or 1:100 dilution of the toxoid (Moloney test). An inflamed area of 1 cm. or more in diameter appearing at the site of the injection from 1 to 48 hours later indicates sensitivity and either diphtheria toxoid should be omitted entirely (if a severe reaction occurs) or only 0.1 cc. should be given.

Prophylactically, 1 cc. of fluid toxoid should be given if the child has previously been immunized; if not, the usual injection of antitoxin should be given.

Therapeutically, diphtheria antitoxin only should be used and in *large* doses. Reactions are no more severe nor any more likely to occur following a large dose than following a small one. Also, it should be remembered that a second injection given 2 or 3 days after the first does not compensate for an inadequate initial dose.

Smallpox.—Vaccination by the multiple pressure method is preferable to the scratch method. It may be performed any time after the umbilical cord drops off and should be done before the third year. The upper arm is the usual site. Vaccination should always be repeated in the presence of an epidemic. In an exposed individual, 3 or 4 sites should be used and a different manufacturer's preparation should be used on each site. During nonepidemic times an eczematous individual should not be vaccinated, nor should any member of his family, until the eczema is quiescent. This rule should be disregarded during an epidemic.

Scarlet Fever.—Routine immunization against scarlet fever is not advocated by most pediatricians. It should be restricted to hospital personnel as nurses, physicians, and attendants, institutional inmates, and military personnel.[27] If it is to be used the tannic acid precipitated toxin is recommended because only three intracutaneous injections are given, one every 2 weeks.[27] Reactions are local and much less severe than those following five subcutaneous injections formerly used.

Prophylactically the serum should be used only in rare instances, never routinely "because the child has been exposed to scarlet fever." Sulfadiazine, 0.5 grams daily in the younger child and 1 gram daily in the older child for a week, is a better prophylactic measure.

Therapeutically, sulfadiazine or penicillin should be employed in adequate doses. Rarely, if ever, should serum be used.

Measles.—There is no lasting artificial immunity to measles. For prophylaxis, immune globulin (gamma globulin) should be used following exposure[28] in amounts aimed to lessen the severity of the attack, .02 cc. for each pound of body weight. Larger dosage will prevent the disease but the immunity lasts only from 4 to 6 weeks. It is better to permit the child to have mitigated measles and develop a permanent immunity than to protect him for such a short time only. To be effective the globulin must be given as soon as possible following exposure. Giving it after the development of the coryzal symptoms is valueless.

German Measles.—There is no artificial immunity and no prophylaxis for this disease and its only serious implication arises if it occurs in a pregnant woman during the first trimester of pregnancy, in which instance there is a great possibility that some congenital anomaly may develop in the fetus.

Chicken Pox.—There is no artificial immunity and no prophylaxis for this disease.

Rheumatic Fever.—There is no known method of producing immunity. Prophylactically both sulfadiazine and penicillin have been used to lessen the incidence of recurrent attacks.[29,30,31] That this regime is not without its disadvantages is brought to attention when one remembers that deaths occur from this use of the sulfa drugs and also the fact that several investigators have reported the development of resistant strains of streptococci following use of the medication.[31-34]

Typhoid Fever.—Artificial immunity may be developed by the injection of triple vaccine (typhoid and paratyphoid A and B). It should not be given to a child under 2 years of age, to a woman who is menstruating, or in the presence of fever, either acute or chronic. It should be given to children going to camps, to foreign travelers, to campers, and to any one who may be in areas of questionable sanitation. The usual initial dose is 0.5 cc. subcutaneously. Two 1 cc. doses are then given at intervals of 2 weeks. Subsequently, 0.1 cc. dose intracutaneously (2 or 3 years after the initial immunization) acts as a recall injection.

Rocky Mountain Spotted Fever.—Immunization consists of 2 to 3 doses of 1 cc. of vaccine at 7-day

intervals given intramuscularly. A yearly recall injection of 1 cc. should be given. Therapeutically, para-aminobenzoic acid[35] should be given in doses of 1 gram for each pound of body weight for the smaller child (and half this dosage for the larger child) each 24 hours. The amount is divided into 12 doses, given every 2 hours. Sodium bicarbonate should be given along with the drug. Signs of toxicity indicating withdrawal are acidosis, delirium, abdominal distention and leukopenia (3,000 or less leukocytes). Medication should be continued for several days after the temperature returns to normal.

Brucellosis.—There is no vaccination available for this disease. Prophylaxis depends chiefly on drinking no unboiled or unpasteurized milk. If presence of the disease is proved by positive blood culture 0.5 gram of streptomycin should be given every 6 hours for 7 days *and* 1 gram of sulfadiazine every 4 hours for 2 or 3 weeks.[36]

Influenza.—Results of vaccine injection are variable. It depends upon the particular strain of virus present whether immunization will be effective or not. Vaccine should never be used in any individual who is sensitive to egg. Immunization[37] consists of a single injection of vaccine: 0.25 cc. under 3 years of age, 0.5 cc. between 3 and 6 years of age, 0.5 to 1 cc. from 6 to 12 years of age, depending upon the size of the child, and 1 cc. over 12 years of age. Therapeutically vaccine is of no value.

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FLUORINE AND DENTAL CARIES

As knowledge advances it becomes apparent that the fluoride content of the domestic water is destined to play an important role in dental hygiene. Even at this stage of the development, there seems much justification for classifying domestic water supplies on the basis of dental health into one or the other of three groupings:

1. Those carrying naturally the *optimal* concentration of fluoride (F) i.e. about 1.0 part per million, no treatment being required.

2. Those carrying an *excessive* concentration of fluoride requiring the removal of the excess in order to protect the population against endemic dental fluorosis (mottled enamel), or,

3. Those *deficient* in fluorine to which fluorine might be added to bring its concentration up to the optimal in order to lessen the amount of dental decay in the community.—H. Trendley Dean, *Illinois Medical Journal*, January, 1949.

Normal Feeding in Infancy*

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In the infant, growth is a manifestation of healthy living. An infant will not grow at a normal rate unless it is being supplied with an adequate, well-balanced diet. Normal feeding in early infancy may be properly maintained by the use of either breast feeding plus dietary supplements, or artificial milk formulas plus dietary supplements.

During the past few years, breast feeding has greatly decreased, owing in a large part, to the marked advancements in the quality and success of artificial feeding, and to an unwillingness of mothers to nurse their infants. This reluctance is no doubt the result of a number of factors, especially the fear of loss of physical attractiveness and the limitation of activities outside the home. The mother should be reassured by her physician that she need not gain weight, lose weight, or lose breast tone if she nurses her child, and in order to permit the mother greater freedom from nursing duties, a bottle of formula may be substituted for the breast occasionally when the mother wishes to be away from the home for a longer period than the feeding interval.

The advantages of breast feedings are so well known that it is the duty of each physician to try to convince the mother of the importance of maintaining the infant on this type of feeding. The milk of a healthy mother, who is receiving a well-balanced diet may be expected to contain, in sufficient amounts, all the nutritional requirements of the infant except vitamin D and iron. Breast milk as the sole food is adequate for only the first 3 or 4 months, after which other foods must be added in order to maintain a perfect nutritional balance. The morbidity during the first few months, according to Grulee and Leslie[1] is much lower in breast fed babies than in those who are artificially fed. Another advantage of breast feeding is that the baby gets a sense of security through fondling and satisfies his hunger, without the emotional disturbances of the mother that often occurs if the baby refuses part of his bottle, or demands more than his rationed portion. This psychic satisfaction will not be achieved for the infant unless the milk supply is adequate. The practical aspects of breast feeding should also be stressed. Human milk requires no preparation. It is readily available at the proper temperature, and free from contaminating bacteria. Errors in calculation or in preparation of formulas are avoided so that the chance of feeding disturbances are greatly reduced.

Provided that the mother is in a state of good health and her supply of milk is adequate, there are no disadvantages to breast feeding except the very rare instances of allergy on the part of the infant to the mother's milk. In such cases, an attempt should be made to find the specific allergens in the mother's milk before breast feedings are permanently discontinued.

Certain conditions may influence the quantity and quality of mother's milk. Heredity is an important factor; the ability to nurse is commonly transmitted from mother to daughter. The psychological set may, also, be transmitted from mother to daughter. The nervous and mental condition of the new mother is probably the greatest single factor in inadequate milk supply in the absence of marked physiologic hypogalactia. A nervous, high-strung, worrying mother may have an abundance of milk at one time and almost none at another. The technical aspects of breast feeding should be fully explained to the mother. It is not unusual that breast feeding is deemed impossible simply because the attending physician fails to recognize that the difficulties may be related to the manner of feeding and not, as supposed, to the qualitative or quantitative inadequacies of the milk. For the future nutrition of the baby, the mother's diet must, of course, be well balanced and must contain foods rich in vitamins, such as milk, eggs, leafy vegetables, and raw fruits.

Contraindications to breast feeding should be borne in mind. As far as the infant is concerned, the conditions are general debility or illness, allergy to breast milk or the complete absence of breast milk. As far as the mother is concerned, the factors are intractably inverted nipples making suckling impossible, suckling so painful that the mother could not reasonably be expected to stand it, communicable diseases, open tuberculosis, and insanity. Syphilis is a contraindication only when the mother has had a recent active infection and the baby shows no evidence of the disease. Severe mastitis is usually incompatible with continuation of nursing.

When to start putting the baby to the breast would seem to be an individual matter. It is a good plan to withhold feedings from the newborn infant for a period of several hours, in order to permit both the infant and the mother to recover from the shock of birth and for them to be well rested. Twelve hours usually is sufficient time. The total amount of colostrum secreted daily is not large. It is thought to have a mild laxative effect and to aid in the expulsion of meconium. Some writers have suggested that it may contain antibodies. In order for the infant to obtain the colostrum and to stimulate breast secretion, he should be permitted to nurse at 8-hour intervals from alternate breasts for periods of 5 minutes. Immediately thereafter, and at the intervening 4-hour periods, he is offered 5 per cent carbohydrate solution in quantities as he desires. After the second day of life, the infant is placed at the breast at 4 hour intervals for periods of 5 minutes and carbohydrate solution offered afterwards.

As soon as the secretion of maternal milk is evident, the period at the breast should be extended to 20 minutes and the breasts are alternated at successive feedings. Most infants will empty the breast in 5 to 10 minutes, but since complete emptying is the best stimulus to continued milk production and since the

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milk obtained in the latter part of the nursing period is richer than the first, the infant should be kept at the breast for about 15 or 20 minutes to insure complete emptying. The infant should be kept awake and actively feeding during this nursing period. There are several situations when it is advisable to offer both breasts at such feeding instead of alternating the breasts. When the supply of milk is inadequate, the complete emptying of each breast at 4-hour rather than 8-hour intervals may provide the stimulus needed for increased lactation. If the infant receives at least two substitute formula feedings, it may be necessary to empty both breasts at each breast feeding to prevent a decrease of the milk supply. On the other hand, when the secretion of milk is too great, both breasts may be offered at each feeding and incompletely emptied with the intent of securing a partial decrease in lactation from incomplete emptying.

The 4-hour interval for feeding has quite generally become the standard. This interval seems to be readily workable and ideal for both the mother and baby. Regularity by the clock is not as essential in this early period as it is later when diet habits are well established and when regularity creates a habit that is most desirable both as a matter of domestic economy and of discipline. The disadvantage of a rigid schedule for feeding at this early stage is that the time of feeding or the interval between feedings may not correspond with the infant's natural hunger rhythm; this results in frequent prolonged crying and the infant develops various types of feeding difficulties such as refusing certain feedings, taking only small amounts, gulping the food, and the swallowing of considerable amounts of air with the subsequent development of colic. The mother is instructed to allow the infant considerable latitude in regards to the time of each feeding, roughly as much as an hour in each direction. When such a plan is followed, feeding difficulties are kept at a minimum and by far the majority of infants are happy and content. If, however, the infant is erratic and irregular in his feeding habits and especially if he is one of those babies who prefer to sleep all day and nurse every few hours at night, then he must be awakened and fed punctually in order to establish a desired routine. In all babies there are certain advantages in having some schedule for feeding. Sufficient spacing of feedings should be arranged to permit emptying of the infant's stomach and development of hunger sensations. A schedule aids in the development of regular habits on the part of the infant and the avoidance of the habit of frequent small feedings and provides an opportunity for the mother to arrange her own schedule so that there is time for activities other than those devoted to the infant.

By the fifth day, the breast milk supply is usually established and the amount of milk obtained at each feeding and the total amount daily can safely be left to the baby, if he is a good nurser and his mother has an abundance of easy flowing milk. During the first month or so of life, an infant who is fed approximately every 4 hours will receive six feedings daily: 2:00 a.m., 6:00 a.m., 10:00 a.m., 2:00 p.m., 6:00 p.m., and 10:00 p.m. The feeding at 2:00 a.m. can usually be discontinued by the second month and the infant need not be awakened for it after the third or fourth week. It is often possible to defer the 10:00 p.m. feeding an hour or so, and then the infant is more apt to sleep until the 6:00 a.m. feeding. The ensuing daytime feedings may then be adjusted to five times daily. If the infant persists in waking and crying at 2:00 or 3:00 a.m., he may be given a bottle of water. This procedure usually has the desired discouraging effect. By 6 months of age, the 10:00 or 11:00 p.m. feeding can be discontinued and the infant is then on a schedule of four feedings per day. Such a regimen is usually continued until the infant is from 9 to 12 months of age.

If there is any doubt as to the adequacy of the breast supply, it is a wise procedure to weigh the baby before and after each feeding to determine the amount of milk which he ingests. These determinations should be obtained for every feeding for a 24-hour period, since there may be considerable variation in the amount of milk at different feedings. This amount should be compared with the known daily requirements of this period. If the baby does not get enough milk from the breast, he requires complementary feedings. This is not the only time that complementary feedings may be necessary; there are a number of conditions under which it is advisable to feed the infant partially from the breast and partially from the bottle. This may be done while the milk secretion is being established, although at this time it should be used only when there is a marked loss of weight by the infant. Complementary feedings should be withheld as long as possible with the idea that the secretion of milk will be stimulated to a greater extent by the complete emptying of the breast by the hungry infant. Complementary feedings are sometimes used when an infant is being weaned from the breast.

Supplementary feeding, the complete substitution of a breast feeding by artificial milk formula, may be necessary under certain conditions. Supplementary feedings are used at the time of weaning, when it is desirable to allow the breasts to dry up gradually. Supplementary feedings are also used occasionally in the case of normal infants whose mothers have sufficient milk, but are required to be away from home daily for a longer time than the feeding interval. The giving of one bottle a day, even when not necessary, is occasionally advised because of the fact that this accustoms the baby to the artificial feeding so that no difficulty is likely to be experienced if the baby has to be weaned suddenly. In the giving of either a complementary or supplementary feeding, the cow's milk formula should be one suitable in amount and composition for the age and size of the infant. The formula should be approximately the same as that used in the case of infants of the same age who are entirely artificially fed.

Weaning is usually advisable under ordinary circumstances when the infant is from 6 to 9 months of age, but should be avoided, if possible, during extremely hot weather. Weaning is also indicated when an abnormal condition or illness, such as listed under contraindications for breast feeding, suddenly affects either the infant or the mother. The process of weaning should be gradual, if possible. The initial formula should be somewhat more dilute than ordinarily prescribed for infants of a similar age. Initially, one of the breast feedings is replaced by a bottle; after several days another breast feeding is replaced, and so on until the baby is entirely weaned. The total length of time required is governed chiefly by the condition necessitating weaning. Sudden severe illness of the mother would necessitate a sudden, abrupt weaning.

Decrease in the quantity of breast milk, or advancing age of the baby would permit a gradual process of weaning. There may be no objection, under ordinary conditions, to one breast feeding per day for several weeks if necessary to avoid discomfort from engorged breasts.

The artificial feeding of infants, in the sense of successful feeding from earliest infancy without the use of breast milk, is a development of very recent time. This presentation shall have as its primary aim a practical approach to the feeding of a given baby. Probably no two men of the same experience would treat the subject in quite the same manner. There are many ways of feeding normal babies with almost equal success, provided certain minimal requirements are met. To many, the artificial feeding of an infant appears more of an art based on empiricism than a science with well-formulated rules. Nothing could be further from the truth. A formula must fulfill the caloric needs and the protein, carbohydrate, fat, mineral salt, water, and vitamin requirements. A formula must be easily digestible and free from harmful bacteria. All artificial foods must supply what the body needs for energy and repair, for maintenance, and for normal development and growth.

For the average healthy infant, the weight is perhaps the most important single factor in determining the amount of food required, for the formula is calculated to supply about 50 calories per pound of body weight. This calculation of calories takes into account the following: Basal resting metabolism, allowance for specific dynamic action, allowance for activity, allowance for growth, and allowance for unutilized food. The age, size, appetite, and general behavior must also be considered. If one keeps these facts clearly in mind, it will not be difficult to prepare a satisfactory artificial feeding adapted to the needs of the individual infant. The bases of all normal artificial feeding are milk, water, and carbohydrate. The amount of milk given the young infant should be about 1½ to 2 ounces per pound of body weight. Then the total amount of carbohydrate added should be about 1/10 ounce per pound of body weight, with a maximum of 1½ ounces. The amount of water to be added depends on the degree of dilution required to render the mixture readily digestible and on the total volume of food taken. The average baby is expected to be able to take at a single feeding about 2 ounces more than his age in months, but under no ordinary circumstances and at no period in infancy is it desirable to offer more than 8 ounces of milk formula at a single feeding.

The first feedings should consist of a dilute formula, the concentration of which is gradually increased to the desired optimum as tolerance permits. During the first few days attention is directed toward an adequate fluid intake; later greater consideration can be given to adequate caloric intake. The infant is less likely to have regurgitation and abnormal stools if this procedure is followed.

Since cow's milk leaves the stomach more slowly than does breast milk, it is even more important to prescribe a feeding interval long enough to permit complete emptying of the stomach between feedings. Here again, with a few exceptions, a 4-hour interval is both sufficient and feasible. The infant therefore receives six feedings daily during the first month or so. By the second month the number of feedings is reduced to five per day as the night bottle is discontinued. As in breast feedings, the bottle feedings can be reduced to four a day by the sixth month, and three by the ninth month. The amount in each bottle can be started at 3 ounces for the newborn. This amount is rarely taken at first, but as the infant becomes more vigorous, this amount is easily accepted and digested. The quantity per feeding is gradually increased during the succeeding months as previously suggested, until the infant is receiving the maximum of 8 ounces per feeding.

While there is still a considerable divergence of opinion as to what, when, and how much to feed babies, there has been a steady tendency to give more and to give it earlier. Additional foods should be given during nearly all of the first year, no matter how abundant the mother's milk, and are indicated in the same manner and at the same time as with the bottle fed baby. That babies can digest and thrive comfortably and well on a much wider variety of foods, and at a much earlier period than was thought possible only a few years ago is obvious. After eliminating certain purely mechanical factors such as courseness and firmness of the foods and some of the more undigestible articles of food, there is no sharp dividing line between the digestive powers of the infant in the second half year of life and those of the adult. For practical purposes, each practitioner must work out for himself a sort of flexible feeding routine that includes the food requirements.

The writer's routine in the healthy baby at the present time is as follows: Fruit juice—orange, lemon, pineapple, and grapefruit—for the vitamin C content is begun at 2 or 3 weeks of age, with 1 ounce in 2 ounces of water. Ascorbic acid, 50 mgm. daily, is also given at this time to assure an adequate vitamin C intake. The fruit juice is gradually increased to 2 ounces in 2 ounces of water by the end of the second month. Then the water is gradually decreased and the fruit juice increased until the baby is taking 4 to 5 ounces of pure fruit juice daily by the fourth month and throughout the rest of the year. When the infant receives 4 to 5 ounces of fruit juice, the ascorbic acid is eliminated. The kind of fruit juice should be changed at weekly intervals. Some babies have an incorrigible dislike for fruit juices or do not tolerate them well either because of an allergy or because of gastric disturbance. In these cases 100 mgm. of ascorbic acid daily is substituted.

Cod liver oil is begun very early because of its rich content of vitamin D and because it is only exceptionally disliked and refused if started early and quite regularly refused if begun much later. One-half teaspoonful is given daily starting at the end of the first month, and gradually increased to 1 teaspoonful at the end of the second month and to 2 teaspoonfuls at the end of the third month. This amount is given throughout the rest of the first year. If cod liver oil is refused or its use too unpleasant for the baby and mother, it can be replaced by a cod liver oil concentrate, given in amounts containing from 500 to 1000 units of vitamin D daily. Strained vegetable water supplied from the cooking of the vegetables for the family table is given to the infant early in life for its mineral salt content, 1 ounce being given at the end of the first month; this amount is gradually increased to

3 or 4 ounces by the end of the second month. One type of vegetable water is given daily for a week and then a change made to a different type.

Usually the first solid food to be added to the infant's diet is cereal. There are now several precooked cereals on the market which are popular. They are prepared by simply adding some formula. The consistency should be that of of an ordinary thin gruel. It is fed from a spoon so that the baby will learn that method of taking food at an early age. Beginning with a tablespoonful before the morning breast or bottle feeding at about 3 months of age, it is rapidly increased to any amount that the baby will take. When the infant is about 4 months of age, egg yolk, either soft or hard boiled, may be added to the diet. It should always be started in the minutest amounts, and gradually increased as tolerance becomes evident. If tolerated from an allergic standpoint, it can be offered freely during the second half of the first year. Ripe banana, zwieback and toasted bread crust well soaked in milk may be offered to the infant by the fifth month.

Vegetables are a moderately good source of iron and other minerals and of various members of the vitamin B complex. They should be added to the diet at about the sixth month. The vegetable water can then be eliminated. Vegetables should be fed initially in the pureed form and from a spoon. Strained vegetables are offered beginning with a tablespoonful; this amount is rapidly increased to 3 or 4 tablespoonfuls. When the infant reaches 8 or 10 months of age it is well to try vegetables in the chopped form in order to accustom him to more solid foods. Several weeks after vegetables are introduced to the infant, fruits may be added to the diet. They furnish minerals and contain certain vitamins. About the seventh month, baked or mashed potato is given; gelatin desserts may also be added at this time. The baby is now allowed dried bread crust or zwieback to eat from his hand. Teeth are not necessary for this. The bread crust or zwieback is moistened in the baby's attempt to eat it and the softened part is pried off and swallowed. Meat, scraped or in the form of paste, can be safely added to the diet about the seventh or eighth month. Meat is an excellent source of protein as well as of iron and certain vitamins.

Egg white is frequently responsible for allergic manifestations in infants. For this reason, it is best omitted from the infant's diet until he is 10 months old. At this age, it may be started in extremely small amounts and increased gradually and slowly. Whole milk, without added carbohydrate, may be substituted for the formula by the time the infant is 9 months of age. The carbohydrate is gradually decreased beginning with the 8-month formula, until by the ninth month it has been eliminated entirely. Subsequently the minimal daily quota should be a quart of milk daily. There is no advantage in the ingestion of more than a quart of milk daily and there is the possible disadvantage that other essential foods may be displaced. New foods should be started singly and should be well established before others are added. Each new food should be started in small amounts and increased gradually.

SUMMARY

1. The benefits and methods of breast feeding and artificial feeding of infants have been discussed.

2. Newborn infants may be started on feedings 12 hours after birth.

3. It is advantageous to both the infant and mother to maintain a flexible schedule for feeding.

4. Artificial milk formulas should be calculated with the minimal requirements of the infant kept in mind.

5. In both breast fed and artificially fed infants, other foods should be added by the third month to maintain a balanced diet.

6. New foods should be added to the diet singly and in small amounts to permit the infant time to become accustomed to their taste and to prevent any allergic reaction.

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INFANT MORTALITY: UNITED STATES AND STATES, 1947

The infant mortality rate in 1947 was the lowest on record, according to figures released March 6 by the National Office of Vital Statistics of the Public Health Service, Federal Security Agency. The number of deaths under 1 year recorded in the United States during 1947 was 119,173, or 8,110 more than the number (111,063) reported in 1946. However, this increase reflects the tremendous increase in the number of births during 1947 and not a rise in infant mortality. The relative frequency of infant deaths as measured by the infant mortality rate decreased from 33.8 per 1,000 live births in 1946 to 32.2 in 1947. Provisional figures indicate a further decline in 1948 to an estimated rate of 31.8.

The five leading causes of infant deaths in 1947 and the infant mortality rates for each are: premature birth, 11.1; congenital malformations, 4.6; pneumonia and influenza, 3.6; injury at birth, 3.5; and asphyxia and atelectasis, 1.6. These leading causes accounted for 75.7 per cent of all the infant deaths in 1947. This was the first year that asphyxia and atelectasis ranked among the five leading causes of infant deaths and that diarrhea, enteritis, and ulceration of the intestines has not been in this group.

The relative frequency of deaths under 1 year is greatest for the under 1 day age group and decreases steadily with age. Mortality is higher among nonwhite than white infants and among male than female infants.

The 1947 rates for the individual States ranged from 24.7 for Oregon to 50.8 for Arizona and 67.9 for New Mexico. To some extent, differences in State rates may be the result of variation among States in the completeness of both birth and death registration.

As in the country as a whole, the infant mortality rates for most of the States and for the District of Columbia were lower in 1947 than in 1946. In comparing State rates for 1946 and 1947 consideration must be given to the fact that the rates for some States are based on relatively small frequencies. In such instances a small difference in the number of infant deaths may result in a relatively large change in the rate without necessarily indicating a true change in infant mortality.

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Recent Advances in the Treatment of Diarrhea of Infancy*

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Today a great deal more is known about the management of diarrhea; during the past few years many articles on this subject have appeared in the literature. However, most of these are far beyond the scope of the average busy practitioner who sees most of his cases in the home and is without the benefit of elaborate laboratory facilities. The information presented in this paper will be of use to the general practitioner and the tyro in pediatrics, as well as the pediatrician.

In general, the types of infections associated with enteritis are either enteral or parenteral. In the former type the organisms or their products produce intestinal disturbances by direct attack on the bowel wall. The latter or parenteral type of infection, which has its cause outside the intestinal tract, disturbs both the normal production of hydrochloric acid, which is always low in infants, and the normal secretion of gastric juices. This allows pathogenic organisms and partially digested food to enter the small intestine. There these organisms cause enteritis either by invasion of tissue or by the action on the bowel wall of toxic products formed by the growth of organisms in partially digested food. These infections may be in parts of the body far distant from the intestinal tract, such as the mastoids, upper respiratory tract, renal structures, or skin.

For the exact diagnosis of the etiologic type of diarrhea, stool culture is essential, and for the determination of the complications, clinical judgement should be assisted by laboratory investigations. However, except for the more severe forms of diarrhea or those unresponsive to accepted therapy, these may be successfully omitted. The time required for recovery of the bowel from the effects of the infection varies, but generally speaking as the child grows older the recovery period is shortened. Other conditions also affect the recovery period such as the intensity of the infection, condition of the patient at the time of the infection, and the presence or absence of complications.

The severity of systemic effects as the basis for distinction of the types of infection seems logical and easy to comprehend. Roughly they may be divided into simple acute diarrhea, severe acute diarrhea, and the choleriform state.

Manifestations of simple acute diarrhea are limited to the digestive tract. Once the causative factor has been eliminated simple dietary changes are usually sufficient to control the diarrhea. Weight loss is slight and metabolism little affected during the usual 3-day period of illness.

Persistence of weight loss beyond the third day and appearance of diarrhea in the newborn, debilitated, or poorly nourished patient are characteristics of severe acute diarrhea. Digestive symptoms are more severe than with the simple forms, toxic symptoms as lethargy or irritability are present, and the patients, though greatly weakened, remain conscious throughout the course. Body temperature tends to be subnormal, fever being an indication of an infectious complication.

The choleriform state is characterized by neurologic symptoms of stupor progressing to coma, agitation, and convulsions. Only recognition and treatment of the pretoxic state, somnolence, minor signs of collapse, and a trace of glycosuria may avert development of the toxic syndrome.

The treatment of diarrhea continues to present a problem that is far from solved despite considerable decrease in morbidity and mortality rates. The aim of all treatment is to prevent dehydration, in the absence of which almost no deaths occur. A condition in which a few loose stools are the only manifestation may turn into a severe, dehydrating, acidosis-producing disease which is rapidly fatal unless heroic measures are used. Early and intelligent treatment is therefore an important factor. However, I do not believe that treatment of the first two types of diarrhea, namely simple acute diarrhea and severe acute diarrhea, is beyond the scope of the general practitioner. The third type, choleriform diarrhea, with its seriousness should be managed by one specially trained in the physiology of body fluids.

In the simple acute diarrheas all solids should be removed for a period of from 12 to 24 hours or until the frequency of stools shows signs of abating. During the interim fluids may be maintained with the oral administration of 5 per cent glucose water, weak sweetened tea, broth, bouillon, clear soups, or gelatin. These are given in frequency and amounts as desired with the intervals not to exceed 1 hour. If the infant is breast fed one or two feedings should be completely omitted, to be followed by the administration of 5 per cent glucose water immediately before 5-minute nursings. As the stools become more formed and less frequent, the amount of fluid administered before feeding should be decreased and the time of nursing increased until the infant is restored to normal feedings. After 24 hours of normal bowel movements all liquids may be restored except fruit juices. This may be followed in another 24 hours by all nonresidue foods except fruit. The resumption of fruits or their juices may begin only after the patient has been normal for 3 or 4 days.

All infants should be given a 2-quart saline irrigation each day of diarrhea. This form of therapy is especially necessary in those infants who do not take fluids well by mouth. With this therapy it is believed that approximately 1 pint of the fluid is absorbed and not expelled, adding greatly to the fluid intake. In those infants who do not respond to this form of treatment in 24 hours the addition of pectin-agar mixtures, such as kaopectate, should be used, the usual dosage being 1 teaspoon for each movement for all infants under 1 year and 1 tablespoon for each movement for all those over 1 year. This material is given orally in 1 ounce of milk immediately following each bowel movement. The frequency of doses will be determined by the number of stools, with the medication discontinued after 2 days of normally

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formed and eliminated stools. Fortification with apple powder, in the form of appella, or banana powder may also be helpful. The writer has also found that the administration of castor oil at the onset of symptoms is beneficial in the early elimination of the causative agent.

The severe acute diarrheas may also be managed by the family physician or by the neophyte in pediatrics. However, he must be fully aware of the physical signs of dehydration, namely: loss of weight, grayish pallor, and dryness, inelasticity, and diminished turgor of the skin. Some of the mechanics of water balance should also be understood, and briefly they are as follows: In the beginning there is a loss of intercellular water which progresses to loss of water from the cells themselves and finally to diminution of plasma volume. There is a concomitant loss of sodium and chlorides and, when cell destruction occurs, of potassium. Although acidosis has not been observed in the absence of dehydration, the latter is not always followed by acidosis. Doctors unaware of these changes, and failing to realize or recognize their seriousness, institute insufficient treatment or delay the institution of proper treatment, both of which have serious results, whereas the physician who is aware of these changes and alert to their recognition may manage these cases with successful results.

At the onset the management of these cases parallels the treatment of the simple acute diarrheas. Solids are withheld, fluids are forced orally, and irrigations are given once or twice daily as a means of administration of fluid. If castor oil is to be given in this type it must be administered during the first 12 hours. Pectin-agar preparations, apple powder, and banana powder are instituted immediately in the same dosages recommended for the simple form. Those infants on formula should immediately be placed upon equal parts of skim milk and water in the amounts desired every 3 hours. This routine should be continued until the stools begin to be normal in consistency and number. Care should be given to the appearance of starvation stools, at which time solids must be introduced. If under this routine, dehydration becomes evident, subcutaneous fluids must be given or, if necessary, intravenous fluids. Both of these may be administered at home although it is time consuming. The amount, means, and solutions to be used for this purpose will be discussed under the treatment for the choleriform state. With the successful combating of dehydration by this means, the reinstatement of foods again parallels the routine recommended in the simple form of diarrhea. The therapy, although similar in the two diseases, must be more intense in the severe type.

If the choleriform state is to be avoided or successfully treated, I believe all such cases should be managed by the qualified pediatrician who is well trained in the recognition of the symptoms of the pretoxic syndrome and in the management of fluid balance and body chemistries. Although this condition or state may be seen in the debilitated or poorly nourished child its most common form is seen in the newborn and is known as epidemic diarrhea of the newborn. By definition this is a highly virulent communicable disease which may have a biphasic virus as its etiologic agent. There has been no consistency in the finding of bacteriologic studies on living tissue or at autopsy. The epidemiologic factors are numerous, including seasonal variance (death rates are highest in spring and summer); overcrowding of nurseries; lack of proper aseptic technic, due either to inadequate help or equipment; contact with visitors, and failure to remove the infected infant from the nursery promptly.

Symptomatically two stages exist. The period of onset lasts from 1 to 24 days. It is characterized by anorexia, listlessness, distention, change in character and increase in frequency of the stool, which changes from yellow to green liquid but contains no pus or blood, and the continuation of normal temperature in the newborn. These prodromal symptoms may be rapidly replaced by a developing toxic stage during which marked dehydration takes place. This stage is characterized by sunken fontanels and eyeballs, cherry-red lips, and ashen color of the skin. Recovery, if it takes place, occurs after an average of 12 days, while if death ensues, it takes place in an average of 7 days.

Treatment to be effective must be instituted early and rapidly with complete attention to each detail. As in the other two types, rest of the gastrointestinal tract is the principle to be followed. If there is no vomiting water and electrolytes may be given by mouth freely from the beginning. Pectin-agar mixtures should be started at once and in the same dosages as mentioned for the other two types of diarrhea. Skim milk, which is low in protein and fat, may be used until the type of infection can be identified. Practically all diarrheas are aggravated by fat and protein, with the exception of the parenteral type. Therefore, patients with the latter are fed earlier than those with primary gastrointestinal infections. However, except for fluids all foods should be withheld until normal stools begin to make their appearance, at which time the feeding schedule as set up for severe diarrhea may be instituted.

Various sulfonamides, particularly sulfadiazine, given in their usual doses, 1 grain for each pound in 24 hours, and on a 4-hour schedule, have proved of value. Penicillin in doses of from 25,000 to 50,000 units every 4 hours, or 100,000 units in aqueous solution morning and night is indicated in parenteral diarrhea. Streptomycin offers new possibilities in the therapy of Salmonella infections, although the dosage schedule has not been universally agreed upon. Stimulants, such as caffeine or coramine in dosages compatible with age, may have specific indications, but should not be used routinely.

Replacement therapy, which is probably the most important life-saving effort, consists of administration of fluids, electrolytes, essential dietary elements, and vitamins. Since the rate at which water passes through the body is rapid in infants, serious disturbances of water balance may occur quickly. Some knowledge of the distribution and amount of body water and its rate of turnover and the physiologic consequences of fluid and electrolyte loss is necessary for rational therapy of diarrhea.

Body water is contained in three compartments: interstitial, intracellular, and vascular. A large loss from any one is incompatible with life, even though the water may remain within the body. The interstitial fluid compartment volume being the first to be affected may be increased rapidly when isotonic solutions of electrolytes are added and decreased when they are lost from the body. The fluid volume of the

intracellular and vascular compartments is stable, the consistency being maintained by addition or subtraction from the interstitial fluids. Although intravenous solutions quickly relieve the shortage in the vascular compartment and then enter the tissue spaces, practically none of it enters the cells. If loss of intestinal fluid by diarrhea is enough to impair tissue function, plasma pours out of the blood vessels through increase in capillary filtration pressure or permeability, with the consequence that decrease in plasma volume may produce circulatory failure. Loss of half may be fatal. Cell damage also increases permeability so that not only water but potassium ions leave the cell.

The loss of intestinal fluids diminishes reabsorption, (normally 50 per cent) resulting in alkalosis, hypoglycemia, hypoproteinemia, potassium depletion, and thiamine deficiency. This large reduction of uptake from the gastrointestinal tract can be covered by a corresponding limitation of removal by the kidney of the electrolytes and water. However, when the limit of renal conservation is overpassed, deficiency develops with dangerous rapidity. Frequently during this state various important organs or their functions are badly deranged, causing encephalitic manifestations, severe shock, and tissue anoxia. In addition, predisposition to new infectious processes or to exacerbation of chronic infections occurs.

Two phases of diarrheal illness exist. The first is that of dehydration and acidosis and the second is the postacidotic phase during which the ions are depleted. This latter phase shows itself clinically by lethargy or irritability, convulsions, respiratory embarrassment, derangement of cardiac function, intracranial or gastrointestinal hemorrhages, and generalized edema.

Inasmuch as the interstitial fluids with loss of sodium and chlorides are first affected, their replacement is of necessity first in order of treatment. Glucose solutions should be used to cover the physiologic expenditure of water and electrolytes. This may be accomplished by the administration of 10 per cent glucose in normal saline, Ringer's solution, or 1/6 molar sodium lactate solution. Normally the infant needs from 75 to 90 cc. of water for each pound of body weight every 24 hours to keep in water balance. Replacement, therefore, must meet these demands plus enough more to combat weight loss, lack of skin elasticity, and shock. At times this reaches from 3 to 5 cc. for each kilogram every hour by the intravenous route. However the vein cannula is not left in place more than 36 hours because of the danger of infection and phlebitis. Scalp veins, antecubital fossa veins, or the external saphenous vein at the ankle are the usual sites of injection. Also during this phase sodium lactate solution can be given for an existing acidosis without fear of producing alkalosis. Forty cc. ampules of molar solution properly diluted in 200 cc. of sterile water will produce the required 1/6 molar solution. When given intravenously this will raise the plasma carbon-dioxide combining power 25 volumes per cent.

If the loss of fluids has not or can not be replaced to prevent impairment of tissue function, then plasma is the safest form of protein for intravenous use. The quantity recommended is 1 gram for each pound of body weight each 24 hours or approximately 10 cc. for each pound. Whole blood should not be used unless there is an existing anemia or until rehydration has taken place. Since damaged cells allow the escape of potassium ions they may be replaced by the use of Darrow's solution. In severe dehydration the estimated therapeutic dose during the first 24 hours is from 80 to 100 cc. for each kilogram of body weight. The solution must be given over a period of 4 hours to avoid increase of serum potassium to toxic levels causing heart block.

In order to supply an ample caloric intake of from 18 to 20 calories a pound, 10 per cent glucose solution should constitute about half the total volume of intravenous fluid. Vitamins need not be given in illnesses of 1 week or less but are important in prolonged cases and are preferably administered parenterally because of possible failure of absorption from the intestinal tract. Inasmuch as the infant approaches the edge of his existence gradually by way of caloric deficit, limitation of oral administration should not be continued longer than is absolutely necessary. With parenteral infection, limitation of food intake is usually not extensive, but in the enteral type, there is often extensive or even complete failure of food acceptance. It is in this latter type that great care must be exercised.

OSTEOPATHIC MANIPULATIVE THERAPY

The role that osteopathic manipulative therapy plays in this pathological condition cannot be stated by the writer. This is so because none of his patients suffering from diarrhea has been without manipulative therapy, whether it be the soft tissue or corrective force type of therapeutics. However, there seems little doubt that osteopathic lesions play an important etiologic role. If parenteral infections far distant from the intestinal tract can produce alterations of chemistry and function within that tract, is it not conceivable that lesions produce such reactions? Whatever the role of osteopathic lesions producing this condition, their removal again returns the nerve supply to normal which in turn normalizes the blood supply to the area with resultant removal of toxins and changes in tissue chemistry.

A discussion of the relative merits of soft tissue technic and of sharp vigorous application of force for lesion correction will not be undertaken in this paper. Re-establishing and maintaining the normal mechanics of the body in order to correct and sustain body chemistries is the object of therapy. This enhances the return of the affected area to normalcy and helps prevent the development of complications. Whether this necessitates short frequent applications or complete prolonged therapy should be decided by the therapy necessary to correct the lesions present and prevent their return. In other words, the method most likely to produce a lasting effect is the correct method.

Generally speaking, in the simple acute diarrheas, relaxing soft tissue therapy with sharp vigorous correction applied at 24 hour intervals should be sufficient.

In the acute severe diarrheas this same type of therapy may be used as long as corrections are possible. Therapy is applied at 24-hour intervals up to the point where it becomes impossible to continue corrections. Soft tissue technic may be continued two or three times daily.

The choleriform state, because it occurs mostly in the infant, is treated by soft tissue technic. This therapy is applied at from 1 to 2 hour intervals while the infant is awake. Too frequent or prolonged treatment tires the infant, thereby offsetting any beneficial

results obtained. Therapy is continued until complete recovery occurs.

Under the therapy just described, I have had no fatal cases. The importance of osteopathic manipulative therapy in recovery cannot accurately be stated. However, I would not feel that complete therapy had been applied without manipulative treatment even though I have been unable to prove its effect on the body functions and chemistries.

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Jaundice in the Newborn Period*

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Jaundice in the newborn period may be discussed properly under two major classifications:

1. Physiological jaundice or icterus neonatorum
2. Severe jaundice or icterus gravis neonatorum.

PHYSIOLOGICAL JAUNDICE

In the first instance, that of physiological jaundice, it is essential to know that 50 per cent or more of babies exhibit jaundice to a greater or lesser degree. Premature babies show a higher incidence of jaundice than those born at term and the jaundice is more severe than that of mature infants. As a matter of fact, all newborn infants have an elevation of serum bilirubin, which is the bile pigment produced by the breakdown of red blood cells.

Infants are born with an erythrocyte count of from five to seven million and shortly after birth destruction of some of the cells takes place, since there is no longer the need for the high red cell count. Blood oxygenated by the lungs does not need as many erythrocytes as are required for blood oxygenated by a placenta. Hence, by the tenth day of life, there is an adjustment to the average normal of four and one half million red cells. The reason the baby appears jaundiced is that the liver cannot handle adequately the sudden excess of bile pigment. Some escapes into the tissues. The yellow color is seen first in the eyes—the sclera—then in the skin of the face and trunk, and lastly on the extremities. In more pronounced cases, the urine will be tinged as well.

The degree of jaundice is dependent on the ability of the liver to excrete the bile. The poorer the ability, the greater will the jaundice appear. It is this poor liver function which is responsible for the greater incidence of jaundice in the premature. The greater immaturity of the liver in the babies born before term or in the undersized baby born at term makes the possibility of jaundice much greater. There is less excretion of bile pigment by way of the liver.

The symptoms of physiological jaundice are simply the appearance of the yellow or orange color in the sclera and skin, commencing from the second to fifth day of life and lasting for a week or 10 days. Whereas the normal icteric index is from 4 to 6 units, a newborn baby's icteric index will run as high as 15 or 20 by the seventh day of life. It is the time of appearance of the jaundice which is the significant factor in differentiating the physiological form from the severe or pathological forms. Where there is any question, a blood count should always be done. Physiological jaundice will clear spontaneously at about the tenth day of life and requires no treatment other than insuring adequate fluid intake. It would even be wise to order extra water for the jaundiced baby to promote the elimination of the bilirubin by both urine and stool.

PATHOLOGICAL JAUNDICE

Severe or pathological jaundice in the newborn period can be discussed under four headings:

1. Erythroblastosis fetalis
2. Septicemia
3. Syphilis
4. Congenital obliteration of the bile ducts.

Erythroblastosis Fetalis.—Of these four conditions in which jaundice is a prominent symptom or finding, the subject of erythroblastosis fetalis is receiving the most attention at the present time. For many years erythroblastosis, that is the presence of very immature red cells in the circulating blood, has puzzled pediatricians, laboratory workers, and pathologists. Three clinical forms of the disease appear and some relationship was thought to exist, but the mechanism was obscure. These three forms of erythroblastosis fetalis are:

1. That which exhibits universal edema and called *hydrops fetalis*
2. That in which the jaundice is severe and formerly was known as *familial icterus gravis*
3. That in which extreme pallor predominates and which has been termed *congenital anemia of the newborn.*

The first of these forms is incompatible with life and babies born with this extreme anasarca or edema are either stillborn or die shortly after birth. Infants with the second and third forms, if recognized and treated promptly with multiple blood transfusions have a good chance to survive. The etiology of erythroblastosis is considered to be an antigen-antibody reaction which causes hemolysis of the red blood cells. Levine and others[1], in 1941, found an abnormal hemagglutinin in the mothers of infants with erythroblastosis. This hemagglutinin agglutinated and destroyed red blood cells of the infant and of the father. From this observation, it was determined that the red cells of the infant and father contained some substance the mother's cells did not. By comparison with tests done by Landsteiner and Wiener,[2] it was shown that this blood factor was closely related to the Rh agglutinogen found in 87 per cent of the white race. The mothers of babies having erythroblastosis belong to the 13 per cent who lack this agglutinogen and, therefore, are termed Rh negative.

The situation operates in this manner. An Rh-negative mother and an Rh-positive father will produce some or all Rh-positive offspring depending on whether the father is homozygous or heterozygous. An Rh-positive fetus will immunize an Rh-negative

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mother. The agglutinogen of the Rh-positive father will set up an anti-Rh agglutinin in the mother's circulation which will then be transferred back to the fetal circulation and destroy red blood cells of the fetus. This destruction of red blood cells accounts for the characteristics of erythroblastosis as seen in the laboratory or autopsy room.

There are great numbers of immature erythrocytes in the circulating blood, abnormal foci of hemopoeisis, profound anemia with excessive destruction of red cells, and marked increase in blood production as is evidenced by the many areas of blood forming foci. Enlargement of the liver and spleen is pronounced and the normal function of the liver greatly curtailed. Enlargement and defect of the heart are common. Jaundice, if not present at birth, develops in a matter of a few hours in those cases where jaundice is a prominent feature. The stools, however, remain normal in color. It is this early appearance of jaundice which makes one suspicious of the existence of erythroblastosis.

Today one can be on the lookout for the condition before the baby is born. The determination of the Rh factor of the mother is a routine part of good prenatal care. One can also determine in Rh-negative mothers the titer of anti-Rh agglutinin and thereby be more aware of the possible need of aid to the baby. In any baby born of an Rh-negative mother, it is well to get a blood count, typing, and Rh-factor determination immediately after birth. Then, if symptoms of erythroblastosis are present or appear in a day or so, one can be ready with the proper blood for transfusion.

If treatment is delayed or the jaundice is already very extensive, permanent damage to the nervous system may result. Autopsies done on infants dying of icterus gravis show yellow staining of the basal ganglia. It is thought that the neurological symptoms seen in patients recovering from erythroblastosis fetalis are caused by damage from the severe jaundice.

The so-called congenital anemia of the newborn when due to the Rh factor is treated as is the form exhibiting the jaundice. It may be that as the jaundice fades, one sees the extreme pallor in untreated cases that do survive, or it is possible to have the marked anemia without the jaundice. Once the anemia from this cause is overcome, recovery is permanent. In true aplastic anemia, all supportive therapy is to no avail in producing a favorable outcome.

Septicemia.—Severe jaundice is a part of the symptom complex in sepsis of the newborn. The septic agent can enter through any skin or mucous membrane abrasion. Most commonly, it enters around the navel. The bacterial toxins will then cause hemolysis and liver damage, so that bile pigment is excessive and gives the clinical picture of jaundice. Certain poisons may be transmitted from mother to child, such as lead poisoning, and in turn will affect the liver and produce jaundice.

Syphilis.—Congenital syphilis, because of liver pathology, will give rise to jaundice and must be considered in any differential diagnosis of jaundice in the newborn. Usually other evidence of syphilis is present to confirm such a diagnosis.

Other forms of anemia and other reasons for blood cell destruction should be considered in jaundice of the newborn period, though it is rare for any of the other types of anemia, even the familial and inherited ones to show jaundice as a symptom in the first 2 to 4 weeks of life. Severe hemorrhage may give a blood picture of erythroblastosis, but that will not produce the complete picture.

Obstructive Jaundice.—One remaining cause of jaundice must be presented. Congenital atresia or stenosis of part or all of the bile ducts will eventually lead to a jaundiced state in the infant. Although the jaundice may be present at birth, it is more likely not to develop for from 1 to 3 weeks after birth. In about 20 per cent of infants showing biliary duct obstruction, the obstruction can be removed surgically and the infant will develop normally. In the others the infant usually succumbs after a few months of life.

During fetal life the bile ducts develop as hollow out-pouchings of the gut and later become solid cords, which secondarily canalize to form open passageways for bile into the small intestine. It is a defect in this secondary canalization which is thought responsible for the anomalies that cause jaundice. The chief diagnostic signs in this condition are the gray or white (acholic) stools and the presence of bilirubin in the urine which are seen immediately. In other forms of jaundice, this feature is not so definite.

Although septicemia may be severe enough to almost paralyze liver function and certain poisons may do likewise, an acholic stool is strongly indicative of bile duct obstruction. At first the liver can handle the excretion of bile pigments to a certain extent, but as digestion of foodstuffs becomes more and more impaired, the liver is less able to excrete toxic end products. A deepening jaundice appears that makes the skin an olive green and the liver itself becomes cirrhotic before death of the infant at from 3 to 6 months of age.

In an occasional case, there is found a hypoplasia of liver cells. In this condition there is a marked lethargy, a gradually deepening jaundice, acholic stools and an increasing amount of bilirubin in the urine. There is nothing ultimately to do for these infants. They succumb at from 3 to 4 months of age.

SUMMARY

In summarizing the causes of jaundice in the newborn, it can be pointed out that 50 per cent or more of all normal infants will show physiological jaundice, the percentage being greater in premature than in full term infants. Of the pathologic causes of jaundice, erythroblastosis plays the most significant role, but by no means is it the only etiologic agent in icterus gravis.

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Cyanosis in the Newborn Period*

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The bluish gray tint seen in the skin and mucous membranes called cyanosis is a danger signal to be respected in estimating the condition of the newborn. Authorities[1] have stated that in 85 per cent of the deaths that occur in the newborn period, cyanosis is a prominent symptom. It should go without saying, therefore, that the slightest cyanosis, general or local, should be noted, and an analysis of the situation begun. The purpose of this paper is to stress the physiology of hemoglobin and its gaseous interchange. An understanding of the changes taking place in the erythrocyte allows for a more lucid appraisal of the underlying causes of cyanosis and the proper therapy to be instituted.

PHYSIOLOGY

The proximal or physiologic cause of cyanosis is an excessive amount of reduced hemoglobin present in the red blood cells. This reduced hemoglobin imparts the bluish gray color by its high percentage in the capillaries. Methemoglobinemia and sulfhemoglobinemia are so infrequent in the newborn that it is unnecessary to consider these conditions as causes of cyanosis.[2] Therefore, let us consider that cyanosis of the newborn is due to oxygen unsaturation of the blood. This may immediately be confused with anoxemia. Anoxemia is a condition in which there is oxygen want in the tissue cells. Cyanosis usually indicates oxygen want in the tissue cells, but not always. Anoxemia may be present without cyanosis and cyanosis can be present without anoxemia.

It would appear that the unborn infant has been prepared for the possible accident of anoxia by blood properties peculiar to him. He has, on the average, an overabundant supply of red blood cells to carry oxygen. Not only does he have this increase in numbers, but also his red blood cells are much larger than those of the adult.[3] This larger size allows for more hemoglobin to carry the necessary load.

It is known that an individual living in an environment of reduced oxygen tension tends to compensate by development of higher red blood cell concentration and higher hemoglobin. Examples are persons living at high altitudes and the fetus in utero. The infant's insufficient supply of oxygen is still further embarrassed by obstetrical procedures that hasten delivery and attempts to relieve maternal pain. However, the higher the percentage of hemoglobin, the greater volume per cent of reduced hemoglobin the cell can contain. About 5 gm. of reduced hemoglobin per 100 cc. of capillary blood is necessary to produce the blue color of cyanosis. Reduced hemoglobin is measured in terms of oxygen unsaturation of the blood. One cc. of oxygen combines with 0.75 gm. of hemoglobin so that 5 gm. of reduced hemoglobin would equal 6.7 volume per cent of oxygen unsaturation.[2] Any volume per cent of reduced hemoglobin over 7 produces cyanosis.

An individual with a low hemoglobin, particularly less than 5 gm., would not be likely to develop cyanosis; one with a high hemoglobin, as the newborn, can develop a high volume per cent of oxygen unsaturation, over 7 volume per cent, to produce cyanosis. For this reason alone, therefore, cyanosis is more apt to be seen in the newborn. With some understanding of the mechanism of reduced hemoglobin, consideration will now be given to the interchange of oxygen and carbon dioxide in the red blood cells.

Carbonic anhydrase is an enzyme present in the red blood corpuscles, but not in the blood plasma. Carbonic anhydrase catalyses both phases of the reversible reaction $H_2CO_3 \rightleftharpoons CO_2 + H_2O$. It is thus of prime physiological importance in the loading and unloading of carbon dioxide in the lung. Without this catalyst, carbon dioxide can not be excreted nearly fast enough for the needs of the body.[4]

In the very young fetus there is a very small amount of this enzyme, and the amount does not begin to rise appreciably until very near the end of term. Since the fetus lives in all fluid environment, there is perhaps not so much need for the enzyme, as it is possible for it to excrete HCO_3, as well as carbon dioxide, into the mother's blood. It is, however, indispensable to have a good supply before parturition occurs; otherwise when the infant begins to breathe, he may not be able to excrete CO_2 sufficiently fast. The consequences of the low content of enzyme in fetal blood must indeed be taken fully into account in working out quantitatively the gas exchange between maternal and fetal blood in the placenta.

Excessively low levels of carbonic anhydrase (0.5 units or less) are not invariably associated with cyanosis. However, seven of nine premature infants with cyanosis, which could not be explained by recognized physiologic causes, and who were doing poorly, showed clinical improvement and a sustained increase in carbonic anhydrase following transfusions with adult blood. Normal levels of carbonic anhydrase[5] are: Premature infants—0.79 carbonic anhydrase units/cu.mm. of whole blood; normal newborn infants—1.41 carbonic anhydrase units/cu.mm.

The fetus is known to carry lower oxygen tension in its red blood cells and a higher carbon dioxide tension than the mother. Its oxygen tension is enough to sustain life and its carbon dioxide tension just low enough not to upset the cerebral respiratory mechanism so that violent thoracic respiratory motions might be initiated. It is known that some thoracic respiratory motion does occur in utero, and perhaps to some good advantage, such as opening the pulmonary alveoli with fluid so that when the inspiration of air begins, these sacs will not be entirely closed.

Knowing some of the physiological facts gives the physician his greatest implement to prevent cyanosis. A discussion as to the exciting causes can now be considered.

ETIOLOGY

According to McKhann,[2] Lundsgaard's work has clarified the effect of various factors contributing to the appearance of cyanosis. Four factors should be kept clearly in mind.

(1.) The total hemoglobin content of the blood, which affects greatly the appearance of cyanosis. Thus a patient

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with a very high hemoglobin may be cyanotic and not have anoxemia, while a patient with a low hemoglobin may be suffering from anoxemia and still remain free from cyanosis.

(2.) The degree of oxygen unsaturation of arterial blood coming from aerated lung areas. This is affected by the oxygen tension in air, rate and depth of respiration, permeability of alveolar walls, and partial obstructions of the bronchial tree.

(3.) The proportion of blood passing from the right to the left side of the heart through unaerated channels. This is affected by congenital malformation of the heart, atelectasis and lobar pneumonia.

(4.) The oxygen consumption in the capillaries which is influenced by peripheral vascular conditions.

Underlying or exciting causes may be listed under the major headings of (1) cerebral, (2) pulmonary, and (3) circulatory. These are then subdivided as follows and will be discussed in order:[6]

1. Cerebral disturbances
   a. Trauma
   b. Asphyxia
   c. Medication
   d. Metabolic causes
2. Pulmonary disturbances
   a. Atelectasis
   b. Obstruction
   c. Pneumonia
   d. Edema
3. Circulatory disturbances
   a. Congenital cardiac anomalies
   b. Peripheral circulatory disorders.

1. CEREBRAL DISTURBANCES

a. *Trauma.*—Although trauma as a cause of cyanosis usually brings to mind cerebral hemorrhage, it is rarely a cause as such. Frequently petechial hemorrhages are found at autopsy in the brain meninges[7] when death was due to other causes. Considerable evidence is at hand to show that even in a moderately difficult labor, there is sufficient traumatism to produce edema of the brain.[7] Clifford[2] in his many writings has made this very apparent. Pressure exerted on the skull during labor results in increased intracranial tension. Congestion of the vessels then occurs followed by edema of the tissues and finally by slight to moderate hemorrhages and tissue cell death. This sequence of events may cease anywhere from the pressure to the tissue death. Excessive moulding of the cranial bones and pressure by application of forceps are common causes of this type of intracranial damage.

Arbuckle[8] places the osteopathic cranial concept in focus as an explanation of these congestive symptoms. She states that frequently these symptoms can be alleviated almost immediately by osteopathic cranial therapy. Obviously osteopathy has provided relief in many of these cases. Congestive changes may cause depression of the medullary centers, especially if hemorrhage occurs. Infratentorial hemorrhage is usually fatal. Supratentorial hemorrhage may be slow in its medullary effect; therefore, cyanosis is late in appearing as increase of intracranial pressure is slow. Any of these changes can cause general pressure to produce local anoxemia which destroys the ability of the respiratory centers to respond to the normal stimuli.[1]

Premature infants, with immature development of vital centers, are even more prone to cerebral tissue damage. Edema and hemorrhage are, therefore, more frequent. The gross hemorrhage which sometimes occurs, usually subdurally, in the subarachnoid space, or in the ventricles, produces irritation and pressure, damaging the brain as a secondary effect.[6]

It may be said, that attempts to hasten delivery may give rise to cyanosis due to trauma. Trauma with gross cerebral hemorrhage occurs rarely during normal delivery of mature babies. The damage to the brain in the asphyxiated patient seems to be due not to the hemorrhage, but to the concomitant destruction of nerve tissue by anoxia and edema.[6]

b. *Asphyxia.*—In accordance with the findings of most observers I have found that the most common cause of cyanosis in the newborn is asphyxia. The infant in utero must first be considered.

The placenta is the medium through which fetal respiration is carried on in utero. It is through this organ that oxygen is received and carbon dioxide is carried off. When the placental circulation is interrupted, the supply of oxygen is cut off and carbon dioxide accumulates in the blood. It is presumed that as a result of the accumulation of carbon dioxide, an increase in the hydrogen ion concentration within the blood develops, which, in turn, is the initial stimulus to the respiratory center. The greatest immediate danger which the newborn encounters on his way into the world is interruption of its intrauterine respiratory mechanism.[9]

It is possible to interfere with fetal oxygen supply seriously at any one of three points:

(1) The maternal nutrition: In an attempt to provide the fetus with a good oxygen supply, the mother should be given an adequate diet with sufficient vitamins and minerals, and her hemoglobin kept high so that oxygen may be readily transmitted to the placenta, there to be picked up by the hemoglobin of the infant. The mother's nutrition can usually be controlled. Maternal anemia will usually mean an anemic infant with low hemoglobin. Low hemoglobin means low oxygen carrying power and the result will be an anoxia or partial asphyxia.

(2) The placental interchange: The placental interchange is normally upset to cause some degree of asphyxia in all infants. This is produced in utero by the uterine contractions which retard somewhat the placental circulation, thus entailing an increase in carbon dioxide and a decrease of oxygen in the fetal blood.[9] This condition is furthered by pressure on the advancing head with its increase in intracranial pressure. The most important causes of interruption in the placental interchange are early separation or low implantation of the placenta, placental infarction, and disease of the placenta.

(3) The cord flow: Interruption of the cord flow is commonly found in the second stage of labor. A prolapsed cord, pressure on the cord, or the cord around the neck are seen. I had the unfortunate experience recently of having three cases of asphyxia neonatorum in as many days. One was due to a knotted cord, one to a cord prolapse, and one to a cord six times about the infant's neck.

If the maternal nutrition, placental, and cord factors are normal, misconduct of the second stage of labor must be considered as the next greatest cause of asphyxia. Mortality from asphyxia after a second stage of labor of 4 hours or more has been shown to be over three times as great as when lasting but 1 hour.[9] The injudicious use of pituitrin is also a factor in asphyxia. The use of morphine or nembutal late in the second stage creates asphyxia because of narcotization of the infant. Breech presentation with

a late delivery of the aftercoming head so the infant actually smothers as he tries to breathe has been a cause many times.

I have been most conscious of the fetal heart rate during the second stage of labor and it is a rule that this must be recorded at least every 15 minutes. If any change is noted particularly over 150 beats a minute or below 120, it is recorded every 3 to 5 minutes and warning given of possible approaching asphyxia.

Asphyxia then is a term applied to describe that condition in which spontaneous respiration is not established with sufficient prominence or force to maintain life. Therefore, when respiration is established, asphyxia no longer exists. Cyanosis, however, may continue for many hours, days, weeks, or years after normal respiration has been instituted. Classically there is the livid or cyanotic asphyxia and the pallid or shock state of asphyxia. The treatment of each will be discussed later.

3. *Medication.*—From the work of Mines[10] at the Osteopathic Hospital of Philadelphia and of others, I am convinced that the ideal method of sedation in labor with complete safety to the fetus is caudal analgesia. This is true if employed by trained persons who know when and when not to use this method.

It has been pointed out that most analgesic drugs are respiratory depressants and when administered to the mother they diffuse readily into the fetal circulation. This does not mean much early in labor, but when given late these drugs may render the infant so lethargic and apneic as to produce marked cyanosis, and make resuscitation at birth difficult or almost impossible. It has been stated by Bergland[11] that the relief of pain and its total abolition are different matters. The former is perfectly feasible; the latter cannot be accomplished safely by any known drug, and, as summarized by Sage,[12] the ultimate evaluation of any method of analgesia will depend on the price paid for the mother's comfort in terms of infant mortality. Wagner[13] gives, in my opinion, the best summary of the situation. Morphine should never be given within 4 hours of delivery or scopolamine, in amounts of more than ½ grain, within 24 hours of delivery. Nembutal, in amount of 1½ grains, is dangerous within from 4 to 6 hours of delivery. Inhalation anesthesia always produces a cyanotic baby. Of all the inhalation gases ether is still by far the safest.

4. *Metabolic Causes.*—The most common metabolic disturbance affecting the nervous system is tetany. This disease is characterized by hyperirritability. The chief symptoms are twitching, nervousness, convulsion, and cyanosis. During the last few years, tetany has received much attention as a cause of cyanosis of the newborn. The symptoms are much like cranial injury and cerebral edema except that they may appear at any time in the first few weeks of life. It is not a too infrequent cause of cyanosis and, therefore, should never be overlooked since it responds readily to specific therapy.[7]

Adrenal hemorrhage may also be classified as metabolic. It may be traumatic in origin or result from anoxia in utero. Cyanosis is a prominent symptom. I have found that almost 100 per cent of cases going to autopsy after death due to anoxia in utero have adrenal damage sufficient to have caused death. Adrenal hemorrhage in the absence of anoxia is hardly possible without direct trauma. Hemorrhage from anoxia with its congestion, edema, diapedesis, and hemorrhage is frequent.

2. PULMONARY DISTURBANCES

a. *Atelectasis.*—Persistent or congenital atelectasis in the newborn is that condition in which expansion of the lungs, normally complete in the first 2 or 3 days of life, has not occurred. The most characteristic sign is cyanosis, often in attacks. It occurs mostly in infants who are too weak to make the necessary respiratory effort. X-rays show irregular linear shadows usually at the base or a lack of aeration of one or more lobes of the lung.[14]

Baty[2] warns about calling physiologic atelectasis a pathologic state. Atelectasis without cyanosis is normally found in the premature even up to 6 weeks after birth. Classically the atelectatic infants show respirations that are shallow and rapid, a cry that is weak and only on stimulation, subnormal temperature, and attacks of cyanosis. Percussion usually does not help in diagnosis unless there is a massive area of consolidation. Very fine rales sometimes occur, but more often nothing is heard. Suspicious cases should be x-rayed. Henderson[15] gives the sequence of events in atelectasis as follows:

> The child breathes at birth, but not with such vigor as to induce more than a partial expansion of its lungs. In the hours and days thereafter its low metabolism and low heat production result in a low production of carbon dioxide. Its breathing is constantly weak. From time to time it has spells of respiratory depression in which the ventilation of the lungs is so poor that serious anoxia develops. The child becomes cyanotic. If it has sufficient vitality, the anoxia increases the sensitivity of the respiratory center sufficiently to balance the subnormal stimulus of insufficient carbon dioxide. In that case respiration improves and life continues. Finally, however, there comes a time in which the anoxia is so acute that the sensitivity of the center is depressed and respiration fails. If atelectasis persists into the second or third week, pneumonia commonly develops.

b. *Obstruction.*—This results most commonly from aspirated amniotic fluid or mucoid material, and, if persistent and extensive enough, may lead to atelectasis and its complications. Obstruction is also believed to be caused by thymic enlargement. The enlarged gland causes pressure about the trachea to give obstructive symptoms. Using the Wasson criterion of x-ray diagnosis, which is based on the measurement of the width of the second dorsal vertebra and the width of the thymic shadow, I have found the former to average about 15 mm. If the latter is over twice the width of the former, enlargement of pathologic dimensions may be considered. However, my experience is the same as that of others[14] in that enlargement as above determined means nothing without symptoms of cyanosis, stridor, and dyspnea.

Congenital stridor is occasionally found associated with cyanosis and is characterized by a crowing inspiration and retraction of the episternal notch. Congenital goiter has been reported and must be considered as a cause of obstructive cyanosis.

c. *Pneumonia.*—This has been reported as a true congenital condition, but pneumonic lesions are more often due to aspiration of infected material, air-borne invasion, or, more commonly, from vaginal or amniotic fluid contamination. Pneumonia is frequently found at autopsy by microscopic examination without previous suggestion of symptoms.

d. *Edema.*—I have seen an occasional case of pulmonary edema at autopsy. Such edema comes about

as readily as edema of the brain, being a result of anoxia. With congestion it causes poor aeration, cyanosis, and asphyxia.

3. CIRCULATORY DISTURBANCES

a. *Congenital Cardiac Anomalies.*—Such anomalies sometimes cause cyanosis; however, the incidence is rare and many severe cardiac lesions go for months or years before cyanosis becomes a symptom. In the newborn, congenital heart lesions should be considered when cyanosis is present soon after birth. The cyanosis in such cases will usually be persistent with increase upon crying, and will be accompanied by continuous high red blood count, feeding difficulties, congenital defects elsewhere, and cardiac enlargement as shown by x-ray. Murmurs may or may not be observed.[16]

By x-ray the anteroposterior view shows a larger than normal heart in overall and transverse diameters. Often it is globoid with overprominence of either right or left silhouette. The upper central shadow is usually not wide. The so-called tetralogy of Fallot is the commonest lesion found in this group. Perhaps about 50 per cent of congenital heart diseases produce no change on x-ray examination;[14] therefore, routine scout films may not give any evidence of serious conditions.

The congenital heart lesions which usually cause cyanosis are: (1) pulmonary stenosis, (2) interventricular defect, and (3) transposition of great vessels. Combinations of any of these basic lesions and others, such as patent ductus arteriosus, will cause cyanosis. However, one of these three mentioned must be present. The tetralogy of Fallot is a combination of these three as well as enlargement of the right ventricle.

It is more common to find that an increased load put upon the heart, because of lack of proper inflation of the lungs, interferes with normal pulmonary circulation. This causes a gradual but progressive fatigue of the heart muscles. Such an increased load upon the right side of the heart interferes with the closure of the foramen ovale which causes a reversion to the fetal circulation and results in severe cyanosis. When the lungs become normal, the cyanosis, murmurs, etc., will clear with it.

b. *Peripheral Circulation.*—This category includes the cases of local cyanosis which come from prolonged local stasis as in a prolapsed arm or leg or an extremity being forced to the side and flexed. This condition is also seen in the face or buttocks, the rest of the body being normal in color. It is due to vasomotor paralysis and clears spontaneously in a few days.

Congenital diaphragmatic hernia may cause cyanosis, but is not too common. Agenesis of the lung is also rare. It had been reported 39 times up to 1939. It is difficult to diagnose even by x-ray and is found, therefore, at autopsy.[14]

Large tumor masses in the neck such as cystic hygroma or teratoma can cause obstruction of the trachea with cyanosis. These conditions are also very rare.[14] Macroglossia with choking should always be thought of in a cyanotic attack.

TREATMENT

There is no better example, in my opinion, of a condition that can best be treated prophylactically than cyanosis of the newborn. It is on prevention that emphasis should be placed. Anyone can administer oxygen and prayers after the condition develops. It takes good pediatric and obstetrical judgement to prevent it. In going back over the causes, what can be done?

1. *Cerebral Disturbances.*—To prevent means to encourage normal obstetrics and to observe the infant carefully after birth, especially for cranial lesions. It is necessary to release locked areas when and where found so as to stop congestion before edema and hemorrhage can occur. Rest, handling with care, and oxygen as indicated are routine. In case of frank hemorrhage, as found by lumbar puncture with fluid under pressure and showing blood, relief will be obtained by frequent taps. Clifford[17] reports tapping every 2 to 3 days until the cerebrospinal fluid is within normal range.

Repeated injections of vitamin K should be used in suspected intracranial hemorrhage and small transfusions of whole blood if the count goes below four million or the hemoglobin below 12 mgs. Vitamin K should be considered as good therapy in all cases where hemorrhage appears to be a factor in the production of cyanosis.

Good prophylaxis is to prepare the maternal nutrition by proper diet and manipulative therapy at regular intervals. It includes the use of analgesia and anesthesia sensibly during labor. It means watching the fetal heart, giving oxygen to the mother—flooding her well with oxygen just before delivery. The infant's nares and mouth should be aspirated well as soon as the head is delivered. The cord circulation should be preserved as long as possible and postural drainage and more aspiration used after the cord is cut. If resuscitation is slow, gentle aspiration of the trachea by catheter, careful rhythmic thoracic pressure, and oxygen should be employed. If the infant is cyanotic yet the heart beat is good, time and care should be taken in all efforts at resuscitation. If there is pallor and a weak heart present, heat should be applied to the body and mouth-to-mouth or catheter insufflation used with oxygen. Alpha-lobeline, 1 ampule into the heart muscle, may be used as an emergency measure. Measures such as beating, spanking, whirling around, cold baths, forcible flexings, and chest pumping are barbaric and are in no way indicated. The infant is in shock and, therefore, needs rest and gentle care. As respirations begin, the infant should be observed carefully. If breathing is not very full, carbon dioxide may be given with oxygen as necessary.

2. *Pulmonary Disturbances.*—Atelectasis requires osteopathic manipulative therapy to the dorsal areas and ribs. Oxygen and occasional stimulation to force crying should be given, preferably before feedings. Carbon dioxide with oxygen is necessary at times to produce deeper respiration. Pulmonary obstruction frequently requires aspiration by bronchoscope if due to aspirated material.

Infants with pneumonia should have osteopathic manipulative therapy and oxygen as necessary. Antibiotics may be used if indicated. Edema of lungs is treated by manipulative therapy, rest, and oxygen.

3. *Circulatory Disturbances.*—These disturbances must be treated by rest and heat. Oxygen is necessary to overcome the cyanosis. Patent ductus arteriosus is relieved surgically in many instances, but for the other cardiac conditions causing cyanosis, little

can be done so far. In cases of adrenal hemorrhage, intravenous adrenal cortex preparations have been suggested along with supportive treatment by transfusions and vitamin K.

Small transfusions of adult blood have been found advantageous in combating cyanosis. This is particularly true in the premature infant because of its low carbonic anhydrase content. Increasing this enzyme, by giving adult blood which has a much higher content, will allow the infant more easily to rid its hemoglobin of accumulated carbon dioxide. Cyanosis is also improved by the intravenous injection of 1 cc. of 1 per cent methylene blue.[5]

CONCLUSIONS

Cyanosis of the newborn is caused by intrauterine, cranial, pulmonary, or cardiac pathology resulting in concentrations of reduced hemoglobin above 7 volume per cent.

The prophylaxis of such pathology has been stressed with emphasis placed on the care during delivery. Early, gentle aspiration of foreign material from the nares and mouth of the newborn is most essential. Warmth, rest, and oxygen are equally important. The osteopathic concept of therapy offers tremendous advantages in handling all cases, particularly those of intracranial and pulmonary etiology.

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Osteopathic Pediatric Care in Prevention of Structural Abnormalities*

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In 1897 Andrew Taylor Still said " . . . all diseases are mere effects, the cause being a partial or complete failure of the nerves to properly conduct the fluids of life."[1] Thirty-seven years later, Speransky, speaking of pathological processes describes many as "dependent" on nervous influences and of the others says " . . . *the nervous component remains from beginning to end the factor that determines their general state.*"[2] The relation of vertebral lesions to innervation has been succinctly stated by Louisa Burns —"Spasm or strain of any part of the vertebral column causes hyperemia, congestion, edema and fibrosis in tissues innervated from the corresponding segments of the spinal cord."[3]

Osteopathy has the unified basis, the absence of which in medicine Speransky laments.[4] It is a severe criticism of our pedagogy that many of our students have developed the position that osteopathic manipulative therapy is of minimal importance as an adjunct or that "correction" is impossible in the case of infants or young children.

There is sufficient clinical evidence to establish the efficacy and frequently the dramatic results of osteopathic manipulative therapy in the acute diseases of childhood, but the anatomical and physiological basis has sometimes been doubted. I shall attempt to fill in some of this material.

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THE INFANT VERTEBRA

At birth the individual vertebra consists of three portions,[5] the centrum and two halves of the neural arch, these parts forming the neural or posterior synchondrosis, which normally closes first, and the two lateral or neurocentral synchondroses. At the birth state these parts are united by hyaline cartilage.

Some of the factors in bone development are well known. It is known that nerve supply and circulation determine the chemical and cytological changes, but that the shaping of bone and the functioning of joint surfaces are dependent on the functioning of the whole body in motion. The failure of the body to produce normal acetabular development when congenital dislocation of the hip joint has been established is recognized.[6] The potential changes in the vertebral areas are not those of luxation, but those of abnormal stresses brought to bear on the cartilaginous elements and the subsequent ossification along the now distorted synchondral planes.

Vertebral anomalies are frequently seen in museum exhibits. Many of these have their inception in the embryo. Some occur during infancy and, as in hemiatrophy or hemihypertrophy, their very nature indicates a central nervous etiology. Other changes are put down by the anatomist and by the radiologist as "developmental asymmetries."

A study has been undertaken in conjunction with the Anatomy Department of the Philadelphia College of Osteopathy under the direction of Angus Cathie,

to attempt to correlate the findings in abnormal vertebrae, e.g., the relation of facet facings to relative length of pedicles and the lateral distortion of vertebrae in relation to muscular attachments. These changes follow mechanical and physical principles. When more is known of them the way will be cleared to even more effective osteopathic manipulative therapeutics.

Growth does not necessarily stop with fusion but the growth tendencies are fixed at this point. Fusion of neural arches is considered to occur between 3 and 6 years of age, but this is the average figure; union may occur in the cervical area at the end of the first year, whereas in the sacral area it may not take place until from the seventh to tenth years.[7,8] The neurocentral synchondroses may begin to disappear at the third year. The secondary centers of ossification at the spinous and articular processes appear at from 15 to 20 years of age but do not fuse until from 18 to 23 years of age. The vertebral end plates are not complete until about 25 years of age. If this seems long for the full development of an individual vertebra, it should be recalled that the age for fusion of the parts of the sacrum is from 12 to 25 years.

THE CONCEPT OF ALTERED SYNCHONDRAL DEVELOPMENT

The fact that more than a third of the average lifetime is given over to growth without fusion, i.e., with the skeleton still in a relatively pliable form, predicates a new emphasis on certain concepts. First, pliability as well as mobility is part of the living state and as such is preferable to the rigid state of senility or else we are all born 25 years too soon!

The longer the period of development the greater the frequency, duration, and extent of damage by extraneous forces. Some of the structural changes usually considered "developmental" can be and are interrupted and altered, i.e., "normalized," by osteopathic manipulative therapy and/or orthopedic procedures.

The earlier in life that changes are perceived and normalizing procedures are instituted, the greater the opportunity for future normal developmental patterns. The changes in synchondral development may not be determined objectively in early life but the causal factors in altered stress patterns and altered mechanics can be determined. This may appear to be "the cart before the horse" because in adults we are prone to consider facet anomalies as causes of altered mechanics. The adult is the end result and once changes of vertebral development have become fixed (carried through the age of fusion) then compensation must take place in the vertebral mechanics. We can not take this same stand in the case of the infant. In relation to the infant, the osteopathic physician is part of the determining environment. He must remove the need for compensation in contrast to maintaining compensation in the adult.

If bone rigidity and full articular and end plate development are required for osteopathic correction to take place, then such correction becomes meaningless. On the contrary, altering stresses and strains through osteopathic methods will determine the normal development of such structures.

So far we have been speaking of variation in the normal. There is no clear line between normality and pathology. The possible relation of lesions to the circumflex vessels and nerves which supply the vertebrae themselves may lead toward osteopathic prevention of the osteochondroses, osteochondritis vertebrae, and other intrinsic spinal pathology.

OSTEOPATHIC EXAMINATION

The areas of weakness in the human vertebral column tend to follow a pattern based on anatomical and mechanical principles. Gravitational stress is greatest at the lumbosacral joint. Rotational stress is greatest at the spinal column, and again at the lumbosacral joint and at the atlanto-occipital joint. Stresses accumulate wherever movable parts are in relation to less movable parts, e.g., lumbosacral, thoracicolumbar, cervicothoracic and atlanto-occipital areas. These are likewise areas of anomalous development inasmuch as they are the sites of transition in vertebral types. Dunnington[9] has emphasized these factors and propounded a theory of recurring patterns of lesions based on secondary stresses following lumbosacral strain, consideration of which is basic osteopathic procedure.

The above-mentioned gravitational factors apply in the infant to the extent that sitting erect and standing have been attempted. The other factors hold without any exceptions and the areas indicated should be closely examined for possible involvement.

The secondary anteroposterior curves begin to appear when the particular part of the body is brought into purposeful activity. Thus at 4 months the child holds up his head and the secondary cervical curve is initiated and stresses are effective on the spinalis, semispinalis, longissimus, and splenius—cervicis and capitis—muscles and those of the suboccipital group. At 7 or 8 months the child sits alone, but for a time the convex lumbar curve of fetal life may remain. The secondary lumbar curve starts when the child sits erect and is established when standing is attempted at from 9 to 10 months and walking with assistance is initiated at a year, and stresses are accentuated on the three great divisions of the sacrospinalis or erector spinae group.

It should be recalled that during this early development, the greatest portion of the column is still cartilaginous without fusion of the primary centers. The cartilage is strong enough to withstand the strain of these various changes and the trauma that is associated with early sitting and standing. The trauma of sudden falling back into the sitting position occurs most often before the lumbar curve has been established and as part of the balancing mechanism the lumbar area is usually in flexion; hence the greatest compression occurs on the centrum and disk rather than on the neural arches and cartilaginous articular areas.

It is hardly necessary to repeat caution against parental urging of children to activities before they are prepared by sufficient strength and coordination. Furthermore, all of the trauma of infancy is not balanced and symmetrical. The frequency of such trauma attests the necessity of frequent osteopathic examination.

Tests for motion used in the adult can be employed in checking lesion patterns, although specific areas of restriction may be more difficult to detect by this method alone. Palpatory findings and paravertebral changes such as Denslow[11] has described must be elicited: viz., a "doughy," "boggy" feeling with hyperesthesia and decrease in "ease and freedom" of the joint in the acute lesion; and hardness, absence of hyperesthesia, and decrease in "total" motion in the chronic lesion.

Points of observation are important—establishing the physical achievements compatible with the age of

the patient and then checking the peripheral effects of lesions, e.g., tension in the flexors of one leg may direct attention to the side of sciatic irritation in the lumbar column; unilateral limitation of abduction may direct attention to the side of obturator nerve irritation. Unilateral tightness in the anterior and lateral thigh regions may direct attention to the side of femoral or lateral femoral cutaneous nerve irritation.

Osteopathic lesions of the appendicular skeleton appear with great frequency in infants and children. Dragging a child by his arm can produce sternoclavicular, acromioclavicular, and shoulder lesions, not to mention cervical and dorsal lesions. Osteopathic manipulative therapy is indicated in Duchenne-Erb paralysis and Klumpke's paralysis, both usually attributed to birth injuries.[12] The former most commonly follows shoulder presentation with stretching of the upper fibers of the brachial plexus. The latter occurs when the arm is stretched above the head as in catching oneself or being caught while falling, thus stretching the lower fibers of the plexus.[13] The maintenance of damaging effects may well be due to the articular muscular and connective tissue trauma which has occurred simultaneously.

The possibility of an individual pattern of structural strain and stress has been mentioned. There may also be a pattern of autonomic imbalance or dysynergism dependent upon the structural strain. Northup[14,15] has indicated the role of osteopathic lesions as modifiers of a possible hereditary autonomic pattern. Correlation of structural and autonomic patterns may lead to more specific therapy in a given case.

OSTEOPATHIC MANIPULATIVE THERAPY

The muscles which mobilize the vertebral column are normally present at birth. The ligaments which limit mobility are present although related to cartilaginous rather than to osseous parts. Restriction or limitation and fixation of vertebral parts are possible whether the opposing surfaces are osseous or chondral. Thus the criteria of spinal lesions can be satisfied in infants as well as in adults. The somatic reflexes are as active in the child as in the adult although their interpretation and subsequent correlation of muscular response are less complete because of less complete cerebellar and cerebral development. Hence corrections can be made in the infant, releasing spasm resulting from reflexes intiated in areas of strain or compression.

Soft tissue and muscle normalization is an important part of therapy but by "correction" I mean "active mobilization." This should be defined as a *very gentle force* sufficient to overcome the contraction of local parts of the rotatores, multifidus, intertransversarii, interspinales, and the less extensive anterior muscles, but not sufficient to disturb the extensive lateral spinal musculature, e.g., trapezius, serrati and quadrati muscles and those of the erector spinae group.

This gentle force can be accomplished through a slight exaggeration of motion when the child has relaxed in the required position or through a gentle "springing" motion. It may be accomplished by utilizing the child's own motion but this tends to be less controllable.

When "correction" is spoken of, it is implied that correction has been required, i.e., that a local area of congestion, of restriction of motion, of local hyperesthesia, or altered maintained position has been determined by careful examination. Sounds of synovial disturbances, of ligamentous pull or vibration, or the sound of rupture of tiny adhesions can be elicited in infants but are not necessarily criteria of normalization. The final test of the effectiveness of the correction is re-examination for the disappearance of the original findings.

The lesions must be corrected in infants if normal motion of joints in all directions is to be maintained, and normal motion is a requisite for symmetry of the neural arch. Because the stresses placed upon the vertebrae determine their development, asymmetry may occur as a result of the local alteration at the level of the lesion or at some other level as a result of the maintained asymmetrical muscle pull.

With this emphasis on early development of the spine, it does not require a stretch of the imagination to perceive the rationale of the contention that manual or mechanical manipulations could affect the early ununited parts of the vertebrae and to recognize it as a basis of therapy. That is part of osteopathy as a whole. But since the moulding of the pliable vertebra is a constant process undertaken by the body-in-motion throughout its development, any attempt to mould the individual parts would be almost immediately offset by the body's own activity if unequal or asymmetrical stress existed. Therefore, the approach to these elements is indirect, through maintaining equalized stresses by the early removal of osteopathic lesions.

TECHNIC

Gentleness and specificity are keynotes for treatment. Specificity should apply to the localizing of the lesion and then to the technic applied. Three representative technics will be described for active correction; three important soft tissue technics will also be described.

Lumbosacral Technic for a Rotational Lesion.—The child is turned on the side toward which the body of the fifth lumbar has rotated. While the shoulder girdle is held firmly by the upper hand, the lower hand brings knees and thighs into flexion, which separates the tapering cartilaginous facet-facings from the sacral facets, and the upper leg is dropped over its fellow and the heel of the hand exerts pressure on the pelvis directly toward the table at a right angle to the lumbar curve.

Third Dorsal Rotation.—The child is placed prone with his head turned toward the side of the dorsal rotation. Operator at the side of the table places his near index and middle fingers at the sides of the affected dorsal spine, very slightly cephalad (remembering the slope of the spines away from the level of the vertebrae). These fingers are reinforced by the palm of the opposite hand. Operator springs gently downward, cephalad and laterally.

Midcervical Rotation Lesion.—The child is placed supine, operator at head of table; the head is supported in neutral position with the palms and the operator's two forefingers are brought together at the level of lesion at the posterior processes (to assure force coming from behind the articular column). The head is rotated away from the side of lesion and this rotation is exaggerated with slight traction, so that resultant motion is in an oblique plane in accordance with the facet facings. This may be done with a gentle thrust or with springing.

Dorsal Soft Tissue Manipulation.—This can be accomplished with the pads of the fingers lateral to the

spine as the child lies supine. The operator stands at head of table, his thumbs over the shoulders maintaining the child's position.

Mandibular and Cervical Drainage.—This can be accomplished with one finger. With the child supine, the operator stands to one side, his cephalad hand maintaining the head in position. Any one of the fingers of the opposite hand is placed well behind the opposite mandibular angle; the other fingers lie lightly on the mandible and cervical tissues. The deep tissues are drained by intermittent pressure applied simultaneously with slight traction on the mandible in its arthrodial plane.

Lymphatic Pump.—This technic is indicated not only for increased lymphatic drainage, but for increased venous return to the heart, indirect effects on the dorsal sympathetics, stretching of the intercostal and pectoralis muscles, and direct mechanical action upon the lung and mediastinal areas. I believe that sufficient force can be achieved by the weight of the hands alone, with motion being directed caudally. If the child can be induced to sing or hum, then five or six compressions are made during a single expiration. If the child is crying, the same rate can be applied. Pressure can be released on inspiration. Facto[16] describes a slight maintained pressure exaggerated at short intervals producing 100 to 120 vibrations per minute for from 5 to 10 minutes.

Treatment should not exceed the limits of strength of the patient; in the child these limits may be reached sooner than in the adult. Downing[17] was referring to adult technic when he said, "Long and strenuous manipulation of soft tissue merely adds physiological insult to already aggravated tissues," yet his thought should be carried in mind when treating children.

SUMMARY AND CONCLUSIONS

1. Anatomical considerations have been mentioned, leading to the osteopathic concept of affecting synchondral and early vertebral development. In discussing this the lateness of actual bony fusion and the importance of early treatment have been emphasized.

2. It has been pointed out that osteopathic examination of the infant or child includes checking anatomically susceptible areas, tests for motion, palpatory findings, observation of areas distal to lesions but of the same innervation, and correlation of lesions with autonomic dysfunction, if possible.

3. It has been shown that specific corrections with gentle thrust, springing force, or maintained forces can be employed in treating infants and children as well as specific soft tissue technics. A few specific technics have been described.

Andrew Taylor Still[18] has told us how he pondered the results in treatment of different conditions until he realized that he had a complete therapy. With more discoveries concerning the functioning of the human body we can continue to broaden the field of osteopathic manipulation. In this age when prophylaxis has received such recognition, the preventive nature of osteopathic treatment in childhood must be acclaimed. Such care may lack the dramatic element and may take a lifetime to prove in any given case, but its logic is sure. Geriatics and pediatrics are really related, because degeneration apparent in later years may be incipient in infancy. In psychology it is recognized that the first 5 years of development are the important formative years. Just as surely early structural development will determine adult structure and function.

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BIRTHS REMAIN HIGH IN 1948

The second largest number of births in the history of this country occurred during 1948. The number of live births registered was estimated at 3,559,000 or only about 4 per cent below the all-time high of 3,699,940 for 1947. Of even greater significance are the figures which take into consideration the unregistered births. The total number of births was estimated at 3,715,000 for 1948 and 3,876,000 for 1947. Only 8 years earlier, in 1940, the last prewar year, the figure was little more than 2½ million (2,558,000).

The 1948 estimated birth rate of 24.4 per 1,000 population was about 5 per cent below the final rate of 25.8 for 1947, but exceeded the 1946 rate (23.3) by almost 5 per cent. (These rates and all other figures which follow are based on registered births.)

The changes that have occurred in the birth rate during the postwar period 1946-48 are striking. Demobilization beginning in the last half of 1945 was reflected by extraordinarily high birth rates in the latter part of 1946. In 1947 the monthly rate declined from the peak rates experienced at the end of 1946 but was nevertheless at a high level throughout the year. The rates in the last half of 1948 were significantly higher than in the earlier months and about equalled the rates in the last half of 1947.

Final 1947 birth rates on a residence basis are now available for each State and the District of Columbia. The State rates ranged from a high of 37.2 (per 1,000 population present in area) for New Mexico to a low of 22.8 for New York. The birth rate for half of the States and the District of Columbia fell within the range 25.0 to 30.0. The rates for fourteen States were below 25.0, while in ten States they exceeded 30.0.

The proportionate changes in the birth rates for each State between the last prewar year, 1940, and 1947 have been calculated. Fifteen States had increases of 50 per cent or more; fifteen increases of between 40 and 50 per cent; fourteen between 30 and 40 per cent; and, four between 20 and 30 per cent. Greater proportionate increases were recorded in those areas which for many years have consistently had comparatively low birth rates.

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Birth Injuries*

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The subject of birth injuries, if taken in detail and if the many injuries that are found in the newborn were covered, would be impossible to deal with properly in a limited space. Such injuries are more common than is generally suspected and are of significance in neonatal morbidity and mortality; they play a role of considerable importance in later deficiencies of physical and mental development of the child.

Almost every organ or anatomical structure of the infant may be more or less severely traumatized incident to labor and damage other than intracranial may result in immediate death, as, for instance, rupture of the liver or spleen, hemorrhage of the adrenals, spinal cord injuries, fractures of the vertebrae, or perforation of the lungs by broken ribs. In nonfatal cases the injuries may be responsible for physical defects manifesting themselves later in life, as in the case of severe retinal hemorrhage, injury of the sclera, damage of the internal ear, fractures or dislocations of the vertebrae, dislocations of the shoulders or other joints, complete severance of facial nerves, and traumatization of the testicle in breech labor.

From the standpoint of the pediatrician who is greatly concerned with the care of any damage to the infant, I have summarized the subject under four major points: common fractures, peripheral nerve injuries, injuries of the spine and neck, and cranial injuries including cerebral hemorrhage.

FRACTURES

The most common fractures to be found in the newborn are fractures of the clavicle, humerus, and leg. The clavicle is broken either straight across or in an oblique direction, most often in its middle third, and, as a rule, without coincidental tearing of the overlying periosteum. This explains the usual absence of both pain and dislocation of the broken ends. Hence a diagnosis is often not made until much later when a protruding callus arouses the attention of the examining physician. If it so happens that the pediatrician is given the care of the baby at an early date, then examination may reveal a slight edematous swelling at the site of the injury about 12 hours after birth. Usually the infant moves the arm on the affected side as freely as on the other, though he may possibly avoid extreme abduction. Customary manipulations during bathing and dressing seemingly do not cause noteworthy pain. Very rarely crepitations can be made out. The fractured bone can be easily immobilized. There is little opposition encountered because of the absence of contracting muscles. Furthermore, the bony apposition of the broken clavicle is maintained by the overlying periosteum which, as before stated, is very rarely ruptured. Therefore, nonunion is rare. The prognosis in clavicular fracture is very favorable.

This type of injury is illustrated in the following case report. A male infant, 2 months old, was seen with the chief complaint of the presence of a lump at the left side of the neck and refusal to bend his head away from that side. A history of difficult delivery was given—a frank breech presentation with forceps used on the aftercoming head. No evidence of a birth injury was noted during the infant's stay at the hospital. The following week at home the mother noted a lump developing at the left side of the neck and as time elapsed it became larger, with the baby refusing to move its head away from that side.

On the day of the first examination the mass located in the left sternocleidomastoid muscle was small, not more than 1½ inches in diameter, and firm. It was evident that cicatricial changes had developed. The head was drawn to the affected side and the chin turned toward the other. The clavicle on the right side revealed no palpable changes but on the left side a slight callus was felt along the upper third portion. X-rays revealed a fracture at right angles to the shaft at the upper third portion. No cervical damage was found. The arm was placed in position and immobilized by a figure-of-eight bandage. Treatment of the neck injury by massage and passive movements of the head was started. Recovery was very good.

In complete fractures of the humerus a marked dislocation of the fragments will clearly reveal the injury. The infant does not move the arm. Palpation and x-ray examination establish the diagnosis. Under proper care the healing process usually progresses rapidly and satisfactorily. In a small number of cases paralysis of one or more nerve trunks follows the injury, either as a result of pressure from tight bandaging or because the nerve has become compressed by or embedded in the callus. Isolated palsy of the radial nerve is one of the most troublesome and a not infrequent sequel of fractures of the humerus.

Fractures of the elbow and of the forearm are rare. Among the fractures of the lower extremity, those of the femur are relatively the most common. As a rule, a femoral fracture causes an unmistakable deformity of the thigh, though in some cases the lesion is not discovered until several days after birth. Good management is necessary to preclude permanent shortening or deformity of the limb.

PERIPHERAL NERVE INJURIES

Brachial palsy (Erb's paralysis) is due to injury of the fifth and sixth motor roots of the brachial plexus. The affected arm hangs limp, rotated inwardly; the forearm is pronated, the palm facing outward and backward. If sensitiveness is present, rest is indicated, the arm being placed against the side, the hand, with fingers extended, supported on the chest. If treated by splints, the arm and hand are placed in the waiter's position, which is simply placing the arm in abduction and the forearm in supination with the palm upward.

The existence of the clinical picture of Erb's paralysis does not necessarily prove the presence of an injury of the brachial plexus, because a practically identical group of symptoms is produced by traumatic lesions of the shoulder joint. Where the signs are mild and perhaps due to bruising, with exudate around the nerve roots, recovery may be rapid, but if the paralysis shows no improvement in a month, or if neuritis exists

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the outlook is poor. The application of the osteopathic principles of manipulative treatment directed to disbursing the exudate, improving circulation, and maintaining joint mobility, gives a more hopeful future. Such treatment should be started within 2 or 3 weeks after birth for best results. Muscular training is of great value even in small babies. Normally at birth the strongest muscular development is seen in the hands and forearms. Voluntary attempts to grasp objects are seen at about the beginning of the fourth month. Swimming and grasping reflexes exist at birth. The exercise given should be of the type that takes advantage of and is consistent with the infant's age.

Facial palsy frequently results from injury to the nerve as it leaves the stylomastoid foramen. Paralysis resulting from such injury appears immediately after delivery. Usually in a few hours or a few days the facial deformity is gone, but it may last 3 months or longer. The paralysis as a rule is unilateral and produces a clinical picture that is most marked during crying. The angle of the mouth is drawn over to the unaffected side; on the affected side the eye is not completely closed; on the side of the injury the folds in the skin of the forehead and the nasolabial fold are obliterated, contrasting with marked deepening of the corresponding folds on the other side. This picture varies according to the number of branches of the facial nerve involved. Central lesions of the nerve are due to cerebral trauma and hemorrhage. Here the paralysis comes on after the first day. If there is a fracture of the temporal bone, there may be a permanent type of paralysis. In the chronic cases, muscular atrophy should be prevented by osteopathic manipulative care.

SPINAL CORD INJURIES

A cord injury should be suspected whenever breech babies develop curious paralyses not easily accounted for. The progress in a cord injury is uncertain. If the injury is not high enough to involve the respiratory apparatus or low enough to involve incompetence of the sphincters, the child will probably live indefinitely, retaining a permanent deformity but with normal mentality. It can readily be understood why the old Schultze method of resuscitation is not in practice today. Many babies have been crippled for life as a result of swinging, thus exaggerating a cord injury which may have been only slight. Where there have been fractures of the spinal column, most often occurring in its cervical portion, the spinal cord is secondarily traumatized by a hemorrhage or by more or less severe compression. Many infants who survive the immediate effects of a cord injury present a potential problem because of the development of sores and consequent septicemia or ascending pyelonephritis starting from cystitis which develops as a result of the paralysis of the bladder sphincter.

CRANIAL INJURIES

In making a diagnosis of cranial injuries, history taking is very important because it is well to know if there was any proof of injury at birth or if the baby was premature. Necropsies show intracranial damage in a considerable proportion of premature infants. The compression of the fetal skull and its moulding during passage through the maternal pelvis produce significant x-ray findings which persist for several hours after birth. The sutures and fontanels are deformed and the bones of the vault override at their margins and lock. The vertical axes in the parietal region are elongated because the parietal bones are displaced away from the base, and the occipital bone is shifted upward and anteriorly by the hinge action at the spheno-occipital and intraoccipital synchondroses.

The spoon-shaped and grooved depressions of the skull bones, which need not always be complicated with fracture or fissure, are the commonest type of head injuries, but fractures at the base, disruption of the occipital plate from the condyles (with breech extraction), laceration of the capsular ligament between the axis and atlas, and rupture of the sutures have been observed. Tearing of the tentorium cerebelli deserves special mention as a cause of hemorrhage into the brain and of fatal asphyxiation.

Hemorrhage into, or on, the brain may accompany a fracture or a fissure, or come from rupture of a cerebral or meningeal vessel which is sometimes caused by extreme overlapping of the cranial bones in cases of marked moulding of the head. The clot is almost always subdural and bilateral. Intracranial hemorrhage may be obvious when typical symptoms are present, such as convulsions, rigidity, irritability, and cyanosis, even in the absence of a bulging fontanel, which I find seldom present. There may be a characteristic continued whining cry.

Often exaggerated faith is placed in the value of a spinal puncture. I see no objections to a spinal tap, either lumbar or cisternal, provided that it is gently and correctly done, but I would advise extreme caution in the interpretation of the findings. For example, the absence of blood in the puncture fluid does not by itself prove absence of an intracephalic hemorrhage; nor does the presence of blood in the puncture fluid prove the presence of an intracephalic hemorrhage. The presence of blood very often results from injuries of vessels by the puncture needle. A spinal puncture may be of definite therapeutic value by instantaneously reducing existing pressure, thus relieving temporarily the pressure against vital nerve centers in the medulla.

In treating suspected intracranial hemorrhage, unnecessary handling and manipulations should be avoided because excessive irritation could hasten the escape of blood from an injured vein. A procedure which permits the baby, wrapped in warm blankets, to be kept lying quietly with its head somewhat raised is the best treatment. Vitamin K, 2 to 4 mgs. intramuscularly, should be given as early as possible. A good prophylactic measure is to inject a total of at least 20 cc. of maternal or paternal blood subcutaneously, equal parts into each buttock. Respiration should be carefully watched and if necessary aided by inhalation of 10 per cent carbon dioxide-oxygen mixture. The head should be slightly elevated. Bromides or chloral hydrate may reduce spasticity and help in preventing a convulsion. If the baby is unable to nurse from the bottle, it should be fed through a catheter. The mortality from intracranial hemorrhage is highest on the day of birth and becomes progressively lower with each day of survival.

CONCLUSIONS

It has been pointed out that any part of the infant is subject to birth injury. The most common types of birth injuries have been divided into four main headings:

1. Common fractures
2. Peripheral nerve injuries
3. Injuries of the neck and spine

4. Cranial injuries, including cerebral hemorrhage.

Under each of these four main divisions only the usual types of injury were considered. Prognosis was given. Though discouraging in severe types of central injury, it is favorable in most other types of injuries.

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Hospital Management of Acute Otitis Media

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Through the winter months the Pediatrics Department overflows with cases of otitis media, bronchitis and pneumonia. This paper will attempt to outline the procedures carried out in an osteopathic institution in acute otitis media in children. Some of them are carried out by the nurses and some by the interns between visits of the staff physician. It goes without saying that orders must be individualized in each instance, for to paraphrase a well-known quotation, we must consider the child who has the disease as well as the disease that has the child.

THERAPEUTIC PROCEDURES

Osteopathic Manipulative Treatment.—This should be given at least three times daily. If there are specific areas of tension, special attention should be paid to them. The staff physician who orders the manipulative therapy should demonstrate his technic to the intern and specify when and for how long treatment should be given. Brief frequent treatments are much more effective in a child than one lengthy treatment daily. Children sick enough to be hospitalized need treatment more often than a busy doctor can get to them. They respond well to osteopathic manipulative therapy and the biggest reason for having them hospitalized is to have them where it can be given to them often.

Humidity.—The humidity should be kept over 40 per cent minimum. It will not be as difficult to keep noses open and there will be less coughing if this is done. We use a mechanical humidifier or cold steam unit where vapor is thrown off under pressure. This type of unit increases humidity without elevating room temperature. When it is cold enough outside that much heat must be supplied and one unit cannot keep the humidity up, supplemental use is made of steamers. If a patient has a cough some medication such as tincture of benzoin or menthol may be used in a steamer, but the moisture is what we are fundamentally interested in.

Forcing Fluids.—The infant body has a high percentage of water normally and its balance depends on a very flexible mechanism. Water evaporates from skin and lungs at a much faster rate than normal when fever is present. Vomiting, which frequently occurs with fever, carries off water too, so that a high percentage of sick children come into the hospital dehydrated. If they tolerate fluids orally that is much the best way to re-establish the fluid balance. It should be remembered that infants are entirely dependent on the drink being offered; even when water is placed within reach most young children cannot help themselves.

Diet.—As indicated above the initial diet is fluid, but this order is temporary; soft foods (as cereal) are added as soon as they can be tolerated. Infants need high calorie diets for convalescence, and the return of the appetite is a good sign.

Vitamins.—Unless the child manifests severe gastric disturbance it is well to keep the vitamin intake high to aid recovery. Children should receive plain cod liver oil, 2 drams daily, and orange juice as desired. Those who do not take sufficient juice should receive ascorbic acid, 50 mgm. daily.

Laboratory Work.—The minimum work should be urinalysis, hemoglobin determination, and erythrocyte, leukocyte, and differential counts for any child who is sick enough to be in the hospital. Many times mild anemia will be discovered and with the addition of some form of iron the child will return to normal more quickly and have fewer complications and recurrences.

Enema.—Soap suds enemas should be given immediately. It is our experience that soap suds give the best results for an initial cleaning out. With high fever it is well to get rid of as many toxic wastes as possible right away.

Laxative.—It is wise to order milk of magnesia, 1 dram, as children cannot spit out the excess mucus that develops with most upper respiratory infections. One dram is not a cathartic dose, but a mild laxative dose to keep the mucus moving after it is swallowed.

Aspirin.—If temperature goes over 104 F. rectally, aspirin should be given as required. The patient who gets consistent osteopathic manipulative treatment seldom has to have aspirin. The optimum body reaction comes up to 104 F. and "fever is our friend" up to that point. An order for cool enemas as needed can be written if high fever is expected.

Local Treatment.—Nose and ear drops may be given every 4 hours, except at night when patient is sleeping. That sleep is very important. Our preference is gluco-fedrin, 2 or 3 drops in each nostril. That amount is not enough to gag the child, is reasonably mild, and has good shrinking properties. Nose drops to shrink the posterior pharyngeal area and allow drainage from the eustachian tubes are much more important than ear drops in treating otitis. Warmed auralgan, 2 or 3 drops in each ear, may be soothing.

Penicillin and Sulfonamides.—Many a child has been saved from paracentesis or spontaneous rupture by the use of these medicaments. The one big disadvantage to the use of penicillin is the psychological scar that the pain of administration leaves. Many children fear the needle from then on. If it is to be used, it should be started with 50,000 units immediately and 25,000 units every 4 hours thereafter. The sulfonamides are notoriously hard on the blood stream, so this must be watched if they are used over any length

of time, and the urinary output should be measured as closely as possible. Both penicillin and sulfonamides have a tendency to allay symptoms before pathology is cleared up. We keep children in the hospital at least 24 hours after drugs are stopped and then order careful observation during convalescence.

It goes without saying that surgical intervention, when indicated, should not be delayed. However, conservative treatment, with the liberal use of osteopathic manipulative therapy, has been successful in many cases without the necessity for paracentesis.

702 Equitable Building.

Book Notices

PEDIATRICS AND THE EMOTIONAL NEEDS OF THE CHILD. Edited by Helen L. Witmer, Smith College School for Social Work. Paper. Pp. 180. Price $1.50. The Commonwealth Fund, 413 E. 57th St., New York, 1948.

It is refreshing to find a treatise on emotional aspects of children which does not attempt to "sell" a particular viewpoint, either in causation or therapy. Rather it is as the preface states, ". . . a selective report of that conference . . . held at Hershey, Pennsylvania, on March 6-8, 1947, with 44 pediatricians, psychiatrists and psychiatric social workers." The divergence of opinion in such a group, whose roster is a veritable "Who's Who" in these fields, is as wide as one might expect, and by virtue of that fact is stimulating to the reader.

Reports are made of all the sessions, held on such topics as knowledge of emotional growth and development, the role of the pediatrician in mental health, the status of pediatric departments in problems of mental health, the prospects of further teaching and training, and promoting comprehensive pediatric service. An appendix of 25 pages gives complete information of the physical and pedagogical arrangements of several of the leading institutions in the country which have such services for children.

The conference attempted to reconcile the problems of mental health as met by pediatrician and general practitioner with practical considerations and with training programs. It is approached through a definition of the fields of pediatrics and mental health (with its varied nomenclature of child psychiatry, pediatric psychiatry, child guidance, etc.), and then by studying and comparing the accomplishments of those already somewhat successful in the field. And the reader is left to draw his own conclusions.

This report is especially valuable for departmental administrators in pediatrics and psychiatry, and for others connected with these particular teaching problems. The pediatrician and the general practitioner who are willing to realize the place of emotional problems in pediatrics can glean much from the discussions, even though they may often come back to administrative details. The appendix is interesting to everyone who is either giving or receiving advanced training in these areas.

While there is no attempt to make this book a keen analysis of the emotional problems peculiar to children, throughout one finds interesting, applicable material such as Dr. Washburn's approach to mental understanding through study of physical development and growth. There are considered such problems as the amount of psychiatry a pediatrician can and may do, whether there should be special departments for this study or interdepartmental cooperation of varying degrees, the value of rooming-in arrangements for the newborn, training of students and residents, and avoiding the misuse of "referrals."

This is a "must" book for progressive teachers of pediatrics and psychiatry.

ARNOLD MELNICK, A.B., D.O.

CLINICAL PSYCHOLOGY OF CHILDREN'S BEHAVIOR PROBLEMS. By C. M. Loutitt, Dean of Faculty, Sampson College. Rev. Ed. Cloth. Pp. 661 with illustrations. Price $4.50. Harper and Bros., 49 E. 33rd St., New York, 1947.

While this volume cannot be recommended for those who seek a book of "specifics" on the behavior problems met with in practice, it does provide an expansive background for those whose dealings are chiefly with children.

Clear insight is given into a number of frequent problems, and sufficient knowledge may be gleaned to give stimulus to intensive study or provide proper preliminary advice for such cases. Loutitt discusses mental deficiency, school difficulties, conduct and personality deviants, speech defects, and handling of the child with superior ability. His chapters on case history and examination, as well as those on sensory and neurological problems, are much too incomplete and elementary for the physician. Objection may be raised to the author's complete rejection of psychoanalytic theory in both diagnosis and therapy and to a few minor points such as condoning mechanical restraints and ill-tasting medication locally as treatment of thumb-sucking. However, his presentation of the psychological implications and influence of several sensory and neurological disturbances and the nontechnical survey of psychological tests and their use balance the scale for the open-minded reader.

Fifty-five complete case histories distributed throughout the book provide excellent illustrative material for the discussions of the problems and their diagnosis and therapy.

The book is interestingly and fluently written and is a comprehensive survey of problems the doctor meets frequently if he handles many children. For those who do not, the text has little value.

ARNOLD MELNICK, A.B., D.O.

DEVELOPMENTAL DIAGNOSIS. By Arnold Gesell, M.D., and Catherine S. Amatruda, M.D. Ed. 2, revised and enlarged. Cloth. Pp. 496, with illustrations. Price $7.50. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1947.

Dr. Gesell and his associates have been minutely examining and keeping clinical records of the development of children for over 35 years, and in many cases records on a single subject have been kept for more than a decade. These records, because of their volume, the length of the observation periods, and the systematic manner in which they have been kept, are of ever-increasing value, and new editions of this work would be justified from time to time if the revision did nothing more than incorporate accumulated statistics and conclusions drawn from them. But this edition includes, in addition, considerable new information that has become available since the first edition appeared: effect of antepartum rubella on the development of the fetus; the Rh factor; and encephalographic findings, among others. A considerable number of case reports have been added to illustrate the diagnostic problems in amentia, convulsive disorders, cerebral injuries, blindness, deafness, infantile aphasia, congenital anomalies, and prematurity. A new section deals with the behavior growth and behavior hygiene of the fetal-infant (the premature infant from birth to the fortieth postconception week), and another important new section deals with the physician's role in child adoption. The concluding chapter, dealing with developmental pediatrics, is also new. In it are outlined both present and future possibilities in that field of clinical medicine which is concerned with the diagnosis and supervision of child development. Proved technics for accurate appraisal of normal and abnormal growth are described for practical use of pediatricians; it is to be hoped that they do not seem so easy to apply that physicians and others untrained in methods of conducting mental tests will apply them and draw false conclusions. Any person who has had experience in giving intelligence tests to older subjects knows that the finest test is thoroughly unreliable if administered by an untrained examiner, and in nonverbal tests, such as many of these are, the possibilities for error are much greater.

This book should be in the library of every pediatrician and every other person who is concerned with human growth and development.

THE CHILD IN HEALTH AND DISEASE. By Clifford G. Grulee, M.D., Rush Professor of Pediatrics, University of Illinois; Attending Pediatrician, Presbyterian Hospital, Chicago; Chief Editor, American Journal of Diseases of Children; Secretary of the American Academy of Pediatrics, and R. Cannon Eley, M.D., Associate in Pediatrics and Communicable Diseases, Harvard University Medical School; Chief of Isolation Service and Visiting Physician, Infants and Children's Hospital, Boston; Member of the Committee on Awards of the American Academy of Pediatrics. Cloth. Pp. 1066, with illustrations. Price $12.00. The Williams & Wilkins Co., Mt. Royal and Guilford Ave., Baltimore, 1948.

This textbook was projected a number of years ago, and actual work on its preparation was begun; but the war intervened, and a combination of circumstances prevented its completion. By the time that work on it could be resumed, much of the material was in need of revision and the entire manuscript had to be rewritten. Perhaps this delay has been advantageous, after all, for as the text now stands it includes much that could not have been included earlier and the working over has eliminated some of the unevennesses that are likely to appear in any new textbook. The actual work of writing has been done by more than 50 contributors, nearly all of whom are widely known for their contributions to pediatric literature. Convinced that medical science has outrun its art—that is, its clinical application—the editors and contributors have placed the emphasis on practical consideration of problems encountered in practice. The 91 chapters are grouped into 19 sections, including such subjects as nutrition, acute and chronic infections, communicable diseases, diseases of the nervous system (including mental deficiency and psychiatric disturbances), and allergy, eczema, and diseases of the skin. Such special matters as pediatric ophthalmology, surgical pediatrics, and pediatric first aid are given attention. One section is devoted to adolescence.

The book is well made mechanically; the paper is of excellent quality, which permits faithful reproduction of the illustrations and legible text material. A few of the illustrations are in color, and they are particularly good.

This is without doubt the most up-to-date and one of the best textbooks available on pediatrics.

ADVANCES IN PEDIATRICS. Editorial Board—S. Z. Levine, Cornell University Medical College, New York; Allan M. Butler, Harvard Medical School, Boston; L. Emmett Holt, Jr., New York University, College of Medicine, New York; A. Ashley Weech, University of Cincinnati, College of Medicine, Cincinnati. Volume III. Cloth. Pp. 364, with illustrations. Price $7.50. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, 1948.

The volumes of Advances in Pediatrics have appeared at irregular intervals. The present volume contains eight monographs of interest to both pediatricians and general practitioners. The authors are from the faculties of the medical schools of Columbia University, Harvard University, Cornell University, University of Pennsylvania, and Johns Hopkins University, and all are recognized authorities in the field of pediatrics. The following subjects are discussed: Effects of Birth Processes and Obstetric Procedures upon the Newborn Infant; Retrolental Fibroplasia; Emotions and Symptoms in Pediatric Practice; Therapeutic Agents in the Treatment of Epileptiform Seizures (it is disappointing, but not entirely unexpected, that credit for the ketogenic diet should be given only to holders of the M.D. degree!); Viral Hepatitis; Abnormalities and Variations of Sexual Development During Childhood and Adolescence; Puberty and Adolescence: Psychologic Considerations; The Osteochondroses. Reflecting the present trend to emphasize the protection and promotion of health rather than the treatment of disease and the restoration of health, two of the eight articles relate directly to emotional, psychological, and social adjustments and another to sexual development. Extensive bibliographies accompany each article.

PEDIATRIC NURSING. By Gladys S. Benz, R.N., B.S., M.A., Associate Director, Union University School of Nursing, Albany, New York; Formerly, Head Nurse, University Hospital, Minneapolis; Head Nurse, Sarah Morris Hospital (Children's Division of Michael Reese Hospital), Chicago; Supervisor and Assistant Superintendent of Nurses, St. Louis Children's Hospital; Nurse, Institute of Child Welfare, University of Minnesota; Instructor in Nursing Education, Summer School, University of North Carolina. Cloth. Pp. 638, with illustrations. Price $4.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis, 1948.

A number of individual features characterize this excellent text on pediatric nursing. Probably the outstanding one is a frank recognition of the fact that no one textbook and no one course can teach the prospective nurse everything that is to be known about child care; the author therefore strives to present a clear concept of underlying basic principles, organized in such a way that they can be retained in mind to serve as apperceptive bases for mastery of new material as it presents itself. Consequently, she presents the text material in the form of units, each of which contains closely integrated material of related nature. These units are The Development of Pediatrics; The Newborn Infant; Growth and Development; Nursing Care of the Child; Diseases Affecting the Body Systems; The Communicable Diseases; The Child in the Community. In line with the present tendency to consider illness in a child merely an episode in his life, the nurse's duties are correlated with the total life of the child in both health and disease and considered in relation to his total well-being—physical, mental, social, and emotional. This newer approach, representing present day educational procedures, has not led to neglect of the solid facts regarding care of the sick child on which successful nursing is based. Extensive references to important books and periodical literature are supplied. A "Teachers' Guide" is provided for instructors in schools of nursing.

CLINICAL ORTHOPTICS. Diagnosis and Treatment. By Mary Everist Kramer, Supervisor, The Orthopedic Department, The George Washington University Hospital, Washington, D. C. Cloth. Pp. 476, with illustrations. Price $8.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

This text is designed to serve two purposes: (1) "to give the student of orthoptics a reference book containing basic knowledge of subjects pertaining to orthoptics and the principles and techniques of the diagnostic tests and orthoptic treatment of the ocular motor anomalies" and (2) "to give the doctor and technician a working knowledge so that they may apply clinically these principles in the diagnosis and treatment of the ocular motor anomalies seen in daily practice and realize the importance of giving treatment for specific fusion anomalies in squint and heterophoria." It presents information obtained by study of the types of motor and fusion anomalies, the treatment, and the results obtained in more than 1,000 cases of strabismus and heterophoria encountered in more than 15 years of private practice. Many of the patients were under observation from early childhood to early adulthood, and the results of the treatment methods used were verified by careful follow-up studies.

Approximately a third of the book is devoted to the anatomy and physiology of the eye, the visual pathways, and the oculomotor system, and to the physical principles of optics. A chapter deals with the training of the orthoptic technician, another with strabismus in general, and another with instrumentation, tests, and technics. Succeeding chapters consider fusion; vision, suppression, amblyopia ex anopsia; abnormal retinal correspondence; convergent strabismus; divergent strabismus; the vertical deviations; the heterophorias; surgery of strabismus; and reading disabilities—myopia. Much information is condensed into the book, and the text is well illustrated; however, there are some unpleasant slips in Latin terminology.

This is a text that can be recommended to the general practitioner who is faced with problems in the field of orthoptics and to the orthoptic technician.

PROGRESS IN NEUROLOGY AND PSYCHIATRY. An Annual Review. Edited by E. A. Spiegel, M.D., Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Philadelphia, Pa. Volume III. Cloth. Pp. 661. Price $10.00. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1948.

This is Volume III of a very popular yearbook that has been made possible by the contributions of sixty-nine authors. It is a collection of thirty-seven papers grouped under four subjects: basic sciences, neurology, neurosurgery, and psychiatry. One hundred and ten pages are given to the basic sciences, 191 to neurology, 107 to neurosurgery, and 227 to psychiatry. There is heavy emphasis on psychiatric subjects in this volume, fifteen of the thirty-seven papers being devoted to it. These papers deal with psychiatric matters rather than review developments in "neurologic" psychiatry.

The reviews of current developments in neuroanatomy, neurophysiology, and neuropathology are highly technical. There is much research reported on synaptic phenomena and the pathology of localized function. An interesting sketch is that of neurologic pharmacology, discussing products such as myanesin, agenized flour, fluoracetate, acetylcholine, curare, botulinus toxin, tetraethyl ammonium (TEA), di-isopropyl fluorophosphate (DFP), and dibenamine. A rather broad note on the literature of the past year on poliomyelitis is included. Bailey is quoted as saying that clinical neurology has reached an alltime low and that it has everything to gain by divorcing itself from psychiatry which has moved into alien pathways. A report on the influence of thymectomy on myasthenia gravis is given.

It is interesting that the review of developments in neuro-ophthalmology includes work done by Kohler and Wallach, gestaltists on "figural after-effects" in vision. In the field of epilepsy, Lennox estimates a world population of epileptics at 10,000,000. The treatment available remains a choice of drugs. Albert Kuntz reviews 176 references to cover the section on the autonomic nervous system.

It is in the field of neurosurgery that great strides have been made in recent years. The articles contained in this section reflect the healthy inquiring activity that is prevalent. Advances in technic and applications are sketched by thirteen authorities, not the least of whom are Freeman and Watts writing on psychosurgery.

The section on psychiatry is prefaced by the statement of Ebaugh and Hirschberg, "The literature in clinical psychiatry is giving increasing recognition to the dynamic aspects of personality and to the psychologic processes, particularly the unconscious forces, which influence and shape behavior." They further state, "From an all-over viewpoint, there seems to be a shift away from the excessive use of the drastic therapies of electric and insulin shock toward therapy based on the physician-patient relationship." In reviewing criminal psychopathology, Karpman points out differences of opinion among psychiatrists.

In the section on child psychiatry the reviewers quote Spitz as finding confirmation for his earlier feeling that the damage inflicted through deprivation of maternal care and stimulation is irreparable. Bender in a study of childhood schizophrenia defines it as a "clinical entity which reveals pathology in behavior at every level and in every area of integration or patterning within the functioning of the central nervous system be it vegetative, motor, perceptual, intellectual, emotional or social." Benda in reviewing progress in the study of mental deficiency states that he and his collaborators collected overwhelming evidence that the common denominator for all situations under which mongolism may occur is the threshold of hormonal sterility. The neuroses are discussed by Masserman and nine associates, who epitomize very well the mass of developmental material appearing in the last year. Of interest is a special section devoted to the Rorschach test and projective technics.

Chapter on psychoanalysis and rehabilitation and re-education complete the volume.

Physicians interested in the emotional phases of practice will find this book of great help in keeping pace with the rapidly expanding field of psychiatry and psychiatric thinking.

THOMAS J. MEYERS, D.O., F.A.C.N.

TREATMENT BY DIET. By Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P., Assistant Professor of Medicine, Northwestern University Medical School, Chicago; Attending Physician, Passavant Memorial Hospital; Consultant in Gastro-Enterology and Gastroscopy, Diagnostic Center, Hines Veterans Hospital; Formerly Consulting Physician, The Mayo Clinic. Ed. 5. Cloth. Pp. 784, with illustrations. Price $10.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

Both professional and lay publications contain voluminous masses of information on nutrition and diet, and, unfortunately, not all the material is well based scientifically. Many physicians rely on dietary information which is not up-to-date and some of which is faulty in the light of present knowledge; many patients have fallen under the spell of diet faddists and consequently are in need of accurate information to offset damage already done. The mass of information and misinformation that is available today makes it practically impossible for anyone but a diet specialist to assay it all and select for himself what is valuable from the large amounts of useless or even harmful dross. Barborka has done the assay and presents the results in concise, easily assimilable form. Much of the information is presented in the form of tables, which are, in the main, well constructed and clear and contain accurate up-to-date information. Among them are tables on the effects of vitamins on the body, their sources of supply, and recommended daily allowances; others present analyses of foods serving to meet basic requirements, symptoms of deficiency states, conditions influencing vitamin requirements and utilization, and many others.

The first chapter of the book is devoted to diet in health. In it is a particularly good and eminently sane discussion of vitamins and their roles in the normal diet; other excellent features are the discussion of caloric requirements, and the typical diets for a normal adult. Emphasis is laid on the economic basis of much of the present day malnutrition. The second chapter is concerned with general principles of the application of diet therapy: methods of calculating diets, methods of serving, suggestions for substitutions, methods of changing diet prescriptions, and suggestions for changing protein and caloric contents of diets. Most of the rest of the main body of the text is devoted to diet in individual diseases—those in which diet is of paramount importance, such as metabolic diseases, nephritis, gastrointestinal diseases, and deficiency diseases; and those in which diet is of varying importance, such as circulatory diseases, febrile conditions, and others. Of particular interest are the sections on food allergy and on diet and skin diseases. A comparatively short chapter is given over to routine hospital diets. Much useful information is given in the appendix, including specific recipes for preparation of items in various special diets.

The book contains a number of color plates, an extensive bibliography of references to the recent literature, and a detailed and carefully prepared index. The typography and makeup of this book merit special comment, particularly the form of the tabular material; much space could have been saved and probably the cost of the book reduced by setting the tables and the diet lists in smaller type and crowding the lines together, but the usefulness would have been greatly diminished.

This book should be on the desk of every physician.

STERILITY AND IMPAIRED FERTILITY, Pathogenesis, Investigation & Treatment. By Cedric Lane-Roberts, C.V.O., M.S., F.R.C.S., F.R.C.O.G., Gynaecological Surgeon, Royal Northern Hospital; Consulting Obstetric Surgeon, Queen Charlotte's Hospital; Albert Sharman, M.D., Ph.D., M.R.C.O.G., Senior Assistant Surgeon, Royal Samaritan Hospital for Women, Glasgow; Assistant Lecturer in Clinical Gynaecology, University of Glasgow; Kenneth Walker, M.A., M.B., B.C. (Cantab), F.R.C.S., F.I.C.S., Jacksonian Prizeman and Hunterian Professor, Royal College of Surgeons; Emeritus Surgeon, Royal Northern Hospital; Andrologist, Philip Hill Parenthood Clinic; B. P. Wiesner, D.S.C., Ph.D., F.R.S.E., Consulting Biologist, Royal Northern Hospital; Mary Barton, M.B., B.S., First Assistant to the Fertility Clinic, Royal Free Hospital, London. Cloth. Pp. 400, with illustrations. Price $6.50. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1948.

The first edition of this work was published in 1939, and in the intervening years many significant advances have

been made in both the diagnosis and the therapy of sterility and impaired fertility which have made a revision of the text desirable. On the diagnostic side, these changes concern the more precise use and interpretation of postcoitus tests, use of invasion tests, technics of semen analysis, and use of cyclical temperature records for the diagnosis of early pregnancy. Among the therapeutic advances have been the more precise indications for and methods of using endocrine preparations, recognition of subclinical infections, particularly those of the cervix, as potential causes of sterility, and lowered fertility, and introduction of the antibiotics and improvements in use of the sulfonamides to correct formerly intractable conditions. All these changes are reflected in the text. Since this book represents the British viewpoint, irradiation for anovulation receives only scant mention in an appendix; the authors point out that this form of therapy is used particularly in the United States, but they have not taken into account some of the more recent work in this field, and the statistics which they cite are now 10 years old.

Considerable space is devoted to artificial insemination, its medical, legal, moral, and social aspects. The authors state that its short-term effects have been good; it has provided an acceptable solution to the problem of childless marriage for many couples; and it has yielded much scientific information about normal and abnormal reproductive functions. They do not, however, overlook the fact that it is an expedient which involves problems which, in importance, may transcend its immediate benefits and that its widespread use may involve dysgenic as well as eugenic consequences.

Although a book of this type appeals primarily to the specialist, the authors have been mindful of the fact that the general practitioner must know what procedures are available, when they are indicated, and what they can be expected to do for his patients.

This is a worth-while book.

TABER'S CYCLOPEDIC MEDICAL DICTIONARY. By Clarence Wilbur Taber, Author, Taber's Dictionary for Nurses, Taber's Condensed Medical Dictionary, Dictionary of Food and Nutrition, Dictionary of Gynecology and Obstetrics and Associates. Ed. 5. Cloth. Pp. 1500, with illustrations. Price $4.00. F. A. Davis Company, 1914 Cherry St., Philadelphia, 1948.

To most readers a dictionary is a dictionary, and they are not particularly conscious of the characteristic features that distinguish one dictionary from another provided they can obtain from the first one consulted the precise meaning of the term desired. The title of the present work indicates its point of particular distinction; it is a "cyclopedic dictionary," resembling the Century Dictionary, the Oxford English Dictionary, and the monumental *Wörterbuch der deutschen Sprache* begun by Grimm in the last century and now nearing completion. It provides the ordinary information (spelling, pronunciation, derivation, etc.) given by all dictionaries, but, in addition, the individual articles deal with the subjects at greater length than do the ordinary dictionaries; the treatment is more like that of an encyclopedia than of a dictionary.

The greater length of individual articles necessitates elimination of less important terms; hence this book must be considered as an abridged medical dictionary, although the terms eliminated are almost entirely ones of only historical significance or highly specialized terms from related sciences. However, more than 50,000 words are defined, only a few thousand less than the number in the unabridged medical dictionaries. The book is particularly rich in information concerning nutrition, pharmacology, first aid, and nursing. Much useful information is given in tabular form in the various appendixes, but it seems to this reviewer that the space taken up by the "Interpreter," which is supposed to enable the physician to interview patients in English, French, German, Italian, and Spanish, might better have been devoted to something else; much of the English is unidiomatic, and the foreign expressions are frequently stilted or worse. The German orthography is nearly 60 years out of date! A number of errors occur in use of the Greek alphabet (for instance, there are two on page 79 of the appendix), and a few other typographical errors have not been corrected.

The names of the 15 collaborators—all of them recognized authorities from Chicago—attest the high quality of this encyclopedic dictionary.

VENOUS THROMBOSIS AND PULMONARY EMBOLISM. By Harold Neuhof, M.D., Clinical Professor of Surgery in Columbia University; Consulting Surgeon to Mount Sinai, Montefiore, Beth El, and Hackensack, N. J., Hospitals. Cloth. Pp. 159, with illustrations. Price $4.50. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1948.

Within the last 10 years there has grown up a great literature on the subjects of venous thrombosis and pulmonary embolism, and, since the problems presented by these related subjects have not been completely solved, there are wide discrepancies in the views expressed. Consequently, a monograph such as this is particularly valuable at this time.

The book consists of two parts, each growing out of a particular assignment by the Medical Board of Mount Sinai Hospital (New York). Neuhof was asked to study the role of pulmonary embolism as a cause of death among patients in the hospital and to work out a plan for its surgical management. The results of this study, made in conjunction with Samuel Klein, M.D., associate surgeon to the hospital, form the basis of part II of the book, "Massive Pulmonary Embolism Based in Part on a Study of 88 Fatal Cases." In the meantime, Neuhof was studying and treating patients in the medical and surgical wards of the hospital, and part I, "Venous Thrombosis and Peripheral Pulmonary Embolism," presents the results of that study. This dual origin accounts, in part, for the somewhat loose and poorly organized presentation of the material.

The chief contribution of the book is its insistence on early diagnosis of conditions which may terminate in fatal embolism. The author presents a large number of cases demonstrating the value of exploration of the femoral vein and aspiration and cleaning out of the iliofemoral segment from the vena cava to the inguinal ligament followed by heparinization. Neuhof describes a method of intramuscular injection of concentrated heparin solution in doses estimated after daily determinations of clotting time; he considers the method suitable for home use. He recommends anticoagulant therapy alone in venous thrombosis confined to the calves; heparin for thrombosis in its more acute and ominous state and dicumarol for later phases and less acute forms. In the presence of femoroiliac thrombosis, particularly when it is complicated by pulmonary embolism, surgical intervention must be combined with anticoagulant therapy.

SPECIALTY BOARD MEETING AND EXAMINATION

The American Osteopathic Board of Ophthalmology and Otolaryngology will hold its annual meeting in Columbus, Ohio, October 10-14 in conjunction with the annual meeting of the Osteopathic College of Ophthalmology and Otorhinolaryngology. Certification examinations will be conducted October 10, 11. Information may be had by writing the secretary, A. C. Hardy, D.O., K.C.O.S. Hospital, Kirksville, Mo.

CORRECTION

In the heading of the article, "Vascular Surgery," which was published on page 361 of the March JOURNAL, the letters, "F.A.C.O.S.," indicating fellowship in the American College of Osteopathic Surgeons, were used after the name of the author, W. Donald Baker, D.O. Dr. Baker has called it to our attention that he is a senior member and not a fellow of the American College of Osteopathic Surgeons. We regret the error.

ANNUAL MEETING OF AMERICAN ASSOCIATION OF RAILWAY SURGEONS

The Sixty-First Annual Meeting of the American Association of Railway Surgeons will be held at the Drake Hotel in Chicago from June 30 to July 2. According to a letter from Chester C. Guy, M.D., secretary, Doctors of Osteopathy who hold appointments on railroad staffs should so indicate if they wish to register at the meeting.

DEPARTMENT OF PUBLIC AFFAIRS

(Continued from page 454)

continue in office until their successors are appointed and qualified. Vacancies occurring on the board shall be filled by the governor for the unexpired term of any member whose office has been vacated, in the same manner as an original appointment. Each board member, prior to entering upon his duties shall take oath prescribed by law and in addition thereto shall make oath as to his qualifications as prescribed herein. Board members may be removed by the governor for neglect of duty, malfeasance, or misfeasance, in their office, or any duty thereof.

Section 3. Powers and duties of the board. The board shall conduct all examinations for applicants for a license hereunder, issue licenses, conduct hearings, revoke or suspend licenses, and administer and enforce all provisions of this Act and shall have full power and authority to make and adopt rules and regulations necessary or proper for the administration thereof. The board shall designate which hospitals are approved for interne training and which osteopathic schools, or colleges, are approved, provided an approved school, college or hospital shall have at least the minimum educational and training standards established by the American Osteopathic Association. The board is charged with and shall enforce within the osteopathic profession in this state the standards of practice prescribed by this Act and the rules and regulations adopted by the board pursuant to the authority granted by this Act. It shall collect and account for all fees provided hereunder and cause same to be paid to the state treasurer. The board shall maintain a record of its acts and proceedings, including, but not limited to, the issuance, refusal, renewal, suspension or revocation of licenses to practice according to the terms hereof and shall maintain a roster of all osteopathic physicians and surgeons registered under this Act, which roster shall indicate the name of the licensed physician, his current place of business and residence, the date and number of the certificate issued to him under this Act and whether the license is in good standing. The records of the board shall be open to public inspection at all reasonable times. The board shall adopt and use a seal, the imprint of which, together with the signatures of the president or vice-president of the board and the secretary-treasurer shall evidence its official acts.

Section 4. Meetings of the board. The board shall hold its first meeting on call of the governor within sixty days after this Act shall take effect and shall thereafter hold annual meetings on the fifteenth day of January of each year in the city of Phoenix and may hold other meetings at such times and places as may be determined upon by a majority of the board upon giving to each member thereof a ten days' written notice thereof. A majority of the members of the board shall constitute a quorum and a majority vote of any quorum present at any meeting shall govern all actions taken except that licenses shall be issued hereunder only upon the vote of a majority of the full board. At the first, and each annual meeting of the board thereafter, it shall select from among its members a president and vice-president who shall serve until their successors are chosen. Each board member shall receive the sum of ten dollars for each full day actually engaged in carrying out his duties as an officer or member of the board, together with all expenses necessarily and properly incurred in attending meetings or in performing his duties, all of which shall be paid from the osteopathic board fund created under this Act.

Section 5. Secretary-treasurer; appointment; duties. The board shall appoint a secretary-treasurer, not a member of the board, who shall serve at the pleasure of the board and who shall receive an annual salary to be paid from the osteopathic board fund, payable in monthly installments, in an amount to be fixed by the board but not in excess of twelve hundred dollars. The secretary-treasurer shall be charged with the following duties and authority:

(1) Serve as administrative assistant to the board.

(2) Collect all monies due and payable to the board.

(3) Pay to the state treasurer any monies received by the board.

(4) Prepare bills for authorized expenditures of the board and obtain warrants from the state auditor for payment of bills certified by the president or vice-president and secretary-treasurer of the board.

(5) Administer oaths.

(6) Act as custodian of the seal, books, records, minutes and proceedings.

(7) Do and perform any other duty prescribed for him elsewhere in this Act. The secretary-treasurer shall, before entering upon his duties, give a bond for the faithful performance of his duties, in such a reasonable amount and with such surety or sureties, as the board shall deem proper, the premium for which shall be paid by the board.

Section 6. Osteopathic board fund created; disbursements. All monies received by the board, from whatever source, shall be paid to the secretary-treasurer who shall before the end of each calendar month deposit said monies with the state treasurer, who shall transfer ninety per cent to an osteopathic board fund, which is hereby created and deposit ten per cent in the general fund. All such monies so deposited to the osteopathic board fund shall be held for the use of the board for the administration and enforcement of this Act and all monies expended by the board hereunder shall be paid from said fund. All sums paid from said fund shall be on warrants drawn on the state auditor upon presentment of a proper claim or voucher by the board, approved and signed by the president or vice-president and secretary-treasurer thereof. Upon this Act taking effect there shall be transferred to the osteopathic board fund herein created all sums of money in the hands of the state treasurer at that time credited to the osteopathic board fund created under article 6, chapter 33, Laws of 1941.

Section 7. License; qualifications; requirements. No person shall practice medicine and surgery as an osteopathic physician and surgeon without holding a license issued by the board under the provisions of this Act. Licenses shall be granted only to applicants who possess the following qualifications and comply with the following requirements:

(1) Be a citizen of the United States, or has declared his intention to become such under the laws of the United States.

(2) Be a person of good moral character over twenty-one years of age and a graduate from an osteopathic college or school having the approval of the American Osteopathic Association.

(3) Hold a certificate of registration of applicant in the basic sciences issued by the Arizona state board of examiners in basic sciences.

(4) Submit a verified application for a license on forms prepared by the board, accompanied by affidavits from three reputable osteopathic physicians and surgeons attesting to the good moral character of applicant and to his fitness to practice medicine and surgery as an osteopathic physician and surgeon.

(5) Successfully pass an examination as provided in this Act, provided, however, that the board shall have authority to waive any such examination in its discretion if the applicant possesses a certificate from the National Board of Examiners for Osteopathic Physicians and Surgeons, indicating he has been examined by questions approved by the board, or possesses a license to practice as an osteopathic physician and surgeon issued under the authority of any other state, territory or District of Columbia, whose standards are comparable to those provided in this Act, as determined by the board.

(6) Pay to the board a fee of twenty-five dollars at the time application is made and pay an additional fee of twenty-five dollars to the board at the time the license is issued, provided, however, if a license is issued without an examination the fee to be paid by applicant at the time the license is issued shall be seventy-five dollars.

(7) Submit to a personal interview at such reasonable time and place as prescribed by the board.

Section 8. Examinations. Examination for a license to practice under this Act shall include all such subjects as are generally accepted as necessary to a thorough knowledge of the practice of medicine and surgery as osteopathic physicians and surgeons. The board shall prescribe rules and regulations

under which the examination shall be given and set the passing grade indicating successful completion of the examination. Examinations shall be conducted at times and places to be designated by the board no less than twice in any one year. Written notice of the date and place of examination shall be mailed to all applicants not less than thirty days prior to the date of the examination. The board shall review the examination of any applicant upon his request, and any mark on an examination re-examined by the board can be changed only by the majority vote of the members of the board. A person failing to pass an examination may be re-examined at any subsequent examination times, within one year without further payment of fees. Persons examined in writing shall be known and designated by numbers only and the corresponding names shall be kept secret until after the grading of such examinations.

Section 9. Practice of medicine and surgery as osteopathic physicians and surgeons. Any person holding a license under this Act, to practice medicine and surgery as an osteopathic physician and surgeon, shall be subject to all state and municipal laws and regulations pertaining to public health and in diagnosticating or prognosticating any human ills and treating same, as an osteopathic physician and surgeon, shall be subjected to all the same duties and obligations and authorized to exercise all the same rights and privileges possessed by physicians and surgeons of other complete schools of medicine in the practice of their profession except that no osteopathic physician or surgeon shall perform major surgery unless he has had two years of surgical training in a hospital approved for such training by the board or shall demonstrate to the board equivalent training, and the board shall certify in writing to the applicant his right to perform major surgery before engaging in any such duties.

Section 10. Renewal of certificates. Every person holding a license under this Act shall renew same prior to the first day of January in each year. No less than thirty days prior to January 1 of each year the secretary-treasurer of the board shall notify each license holder of the necessity of renewing his license. The license holder shall furnish to the secretary-treasurer evidence of having attended, within the year, a refresher course approved by the board of at least two days duration and pay to the board the renewal fee of not more than ten dollars as prescribed by the Board and the secretary-treasurer shall issue a proper renewal receipt to the license holder. The failure to renew a certificate shall operate to suspend the rights and privileges granted hereunder. Any certificate may be reinstated by complying with the condition necessary to renew a license and the payment of a fee of twenty-five dollars.

Section 11. Revocation; suspension. The board shall have the power to revoke, or to suspend for a limited period, any license issued under this Act where the license holder is guilty of any of the following:

(1) Conviction of a felony.

(2) Conviction of a misdemeanor involving moral turpitude.

(3) Violation of any of the provisions of this Act.

(4) Fraud or deceit in securing a license or renewal hereunder.

(5) Unprofessional conduct, which shall be deemed to include (a) intentional or willful betrayal of a professional secret, (b) procuring, or aiding or abetting in the procurement of, a criminal abortion, (c) receiving or giving of any rebates of professional fees, (d) gross inefficiency, or (e) habitual intemperance or gross immorality.

The board shall have authority to make investigations, employ investigators and attorneys and conduct hearings to determine whether any license issued pursuant to the provisions of this Act should be revoked or suspended. Any board member, or the attorney general, or any county attorney who has cause to believe any person holding a license under this Act is guilty of any conduct above enumerated as grounds for revocation or suspension of a license may file with the board a complaint against such person, setting forth the alleged wrongful conduct, a copy of which complaint shall be forwarded within five days after filing with the board, by United States registered mail, to the person charged with wrongful conduct. The board shall promptly set a date for hearing and notify the accused of the time and place for hearing said complaint which notice shall be sent no less than thirty days prior to the date of such hearing. Within ten days after receipt of the copy of the complaint, the person charged shall file with the board an answer, specifically admitting or denying each material allegations of the complaint. The attorney general shall represent the board and the board may employ other counsel, and pay reasonable fees therefor, which authority so to do is hereby granted. The accused shall be entitled to be represented by his own counsel. The board shall have the authority to take depositions and to compel the attendance of witnesses and to issue subpoenas, which may be served by any person authorized by law to serve subpoenas issued out of the superior court and make due return thereof. Witnesses attending any hearing of the board shall be entitled to receive from the board, or other party requiring such attendance, fees and mileage as provided by law for attendance in the superior court of this state. Upon the conclusion of any hearing, as provided for herein, the board shall have the duty to make and enter upon its records a finding, suspending, revoking, or continuing in effect the license under inquiry.

Section 12. Appeal from ruling of board. In the event any person whose license has been ordered revoked or suspended by the board feels aggrieved by any such ruling of the board, he may appeal to the superior court of the state of Arizona in and for the county of Maricopa by filing with the clerk of said court, within thirty days after the ruling appealed from, his verified petition to review the action of the board, setting forth therein the reasons therefor, a copy of which petition shall be sent by registered mail to the board by the person so appealing. The petition shall be docketed as a civil cause in the name of the board as plaintiff and in the name of the person taking the appeal as defendant. The board shall, within thirty days after the receipt of the copy of such petition, cause to be filed in said superior court a transcript of the evidence taken at the hearing along with all exhibits received in evidence and a copy of the ruling of the board. In the discretion of the court the time for filing such transcript may be extended for a period of not more than thirty days. If no transcript be filed as provided herein, the court shall enter an order vacating the ruling of the board in revoking or suspending any license, and reinstate said license.

Section 13. Hearing on appeal. The superior court shall set for hearing the appeal taken by the said aggrieved person as soon as practicable after the transcript is filed. The court shall review the record and may permit introduction of additional evidence by either party and shall enter an order either affirming or vacating the action of the board, which order shall be considered a final judgment of such court from which an appeal may be taken by either party to the supreme court as in other civil cases. Pending an appeal from the ruling of the board to superior court, license holder appealing may continue his practice under his license until final judgment of the superior court.

Section 14. Recording of licenses. Every person holding a license to practice under this Act shall cause same to be recorded in the office of the recorder of the county of his residence, and said county recorder shall keep a record of same in a book to be kept by him for that purpose. Such license shall be displayed in the office of all persons holding a license under this Act.

Section 15. Interne training authorized. Any person who is a graduate from any approved college or school may be permitted by the board in its discretion to serve as an interne in any approved hospital in the state for any designated period of time not to exceed one year. No license for such internship as otherwise contemplated by and provided for in this Act shall be required, but the board shall issue an appropriate permit authorizing any such internship.

Section 16. Holders of existing licenses. The license of any person to practice as an osteopathic physician and surgeon in this state in good standing at the time this Act takes effect shall continue in force and effect the same as though issued hereunder until time for renewal thereof, which shall be accomplished under the renewal provisions hereof and there shall then be issued to such license holder a new license under

this Act, and thereafter all persons affected by this Act shall be subject to the provisions hereof.

Section 17. Designation. Any person practicing under this Act shall designate himself and sign his name, wherever required, in any capacity as "Osteopathic Physician and Surgeon," "Osteopathic Physician," "Doctor of Osteopathy" or by using and affixing the initials "D.O." after his name.

Section 18. Savings clause. Nothing in the Medical Practice Act for osteopathic physicians and surgeons shall be construed to prevent:

(1) A duly licensed physician and surgeon of any other state, district or territory from meeting a person registered under this Act within this state for consultation.

(2) Any physician and surgeon duly licensed in a neighboring state from extending his practice into this state, provided that he does not open an office or appoint a place of meeting or receive calls in this state.

(3) The practice of any other method, system or science of healing by a person duly licensed therefor under the laws of this state.

(4) The practice by physicians and surgeons discharging their duties while members of the armed forces of the United States, or other federal agencies.

Section 19. Violation of Act punished. Any person who practices, or attempts to practice medicine and surgery as an osteopathic physician and surgeon without compliance with the provisions of this Act, or any person who violates any of the provisions hereof, shall be guilty of a misdemeanor, punishable on conviction, by a fine of not less than fifty dollars nor more than five hundred dollars or by imprisonment in the county jail for a period not to exceed ninety days, or by both.

Section 20. Separability clause. The terms of this Act are declared to be separable, and should any word, phrase, sentence or section hereof be declared unconstitutional or otherwise invalid, the remainder of this Act shall not thereby be affected but remain in full force and effect for all intents and purposes.

Section 21. Repeal. Chapter 33, Laws 1941, and all other Acts and parts of Acts inconsistent with this Act are hereby repealed except for prosecutions commenced or penalties incurred thereunder, and any amendments thereto.

Section 22. Emergency. To preserve the public peace, health, and safety it is necessary that this Act become immediately operative. It is therefore declared to be an emergency measure, to take effect as provided by law.

Approved, March 29, 1949

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D.C.

REORGANIZATION OF FEDERAL MEDICAL ACTIVITIES

On March 21, 1949, the Commission on Organization of the Executive Branch of the Government, popularly known as the Hoover Commission, reported to Congress recommending reorganization of Federal medical activities, the objectives being: "First: To provide better medical care for the beneficiaries of the Federal Government's medical programs. Second: To create a better foundation for training and medical service in the Federal agencies. Third: To reduce the drain of doctors away from private practice. The country is now dreadfully short of doctors. Fourth: To provide better organization for medical research. Fifth: To promote a better state of medical preparedness for war."

The report makes eleven recommendations.

Recommendation No. 1. "To accomplish these purposes, the Commission recommends the establishment of a United Medical Administration into which would be consolidated most of the large-scale activities of the Federal Government in the fields of medical care, medical research, and public health (in which we include preventive medicine)."

Under this recommendation, the military medical services would remain intact, except for hospitalization within the United States. Each of the three services would retain one major teaching and research center. The proposed United Medical Administration would provide the major part of all hospital care required by the military forces in the continental United States. The professional personnel of the services may be assigned to the new Administration for duty, research, and training.

The Veterans Administration would continue to certify patients for treatment and would determine disability, ratings, etc., but the United Medical Administration would look after the veterans' medical care.

The Federal Government is attempting to give varying degrees of direct medical care to 24 million beneficiaries—about one-sixth of the Nation. Over 40 government agencies render Federal medical service. In this fiscal year they plan to spend 2 billion dollars. Last fiscal year's expenditures were about one and a quarter billion dollars. Most of this money (61 per cent) was spent by the Veterans Administration. Over 85 per cent of the total expenditures during the last fiscal year was for direct medical care. The rest went for public health, research activities, training, and administration. Expenditures for research were less than 4 per cent of the total.

None of the Federal agencies has the medical manpower resources in sight to meet its responsibilities. This shortage is particularly acute in the armed forces, where lack of medical specialists is critical. Even if Congress should enact a draft law for medical personnel, it would still be improbable that the armed forces could obtain sufficient numbers of medical and surgical specialists. The most important result of this situation is its effect on the quality of medical care which is available to the beneficiaries of this system. This is inadequate as far as military personnel are concerned.

The United Medical Administration should be headed by an outstanding Administrator. He should report directly to the President. He should be the ablest medical and health administrator whose services can be obtained by the government. The Administration should be manned by career personnel drawn initially from the various agencies whose functions are recommended for transfer to the new Administration, supplemented by medical officers whom the armed services would have the right to detail for training and rotation. In addition, the Administration should utilize to the full medical personnel of proved competence in private practice and in the universities.

Recommendation No. 2. "Therefore, the Commission recommends that the Administrator of the United Medical Administration should be assisted by an advisory board, consisting of the Surgeons General of the Army and Navy, the Air Surgeon, and the Administration of Veterans Affairs or his representative. This board should advise the Administrator on policies. Thus, we propose a unify of services in the national interest, rather than separate services to special groups."

Recommendation No. 3. "We recommend that the Administrator and three Assistant Administrators be appointed by the President with the advice and consent of the Senate. All other officials in the Administration should be appointed by the Administrator and due consideration should be given to the promotion of properly qualified personnel in the career service."

Recommendation No. 4. "We recommend that the functions, facilities, and the personnel for medical care of the following activities should be transferred to the United Medical Administration. a. The general hospitals of the armed forces in the continental United States (except a medical center for each of the three services), and station hospitals (certain of which the Navy calls 'Dispensaries') in the continental United States except those at outlying posts so located that other hospitals of the United Medical Administration would not be near enough to provide the care required. b. The hospital functions of the Veterans Administration in toto, including the outpatient services in the field offices of the Veterans

Administration. c. The four nonmilitary hospitals in the Canal Zone. d. The hospitals of the Public Health Service. e. The functions, facilities, and personnel of the Public Health Service.

"Hospital functions which should not be transferred: a. The armed forces station hospitals above excepted, together with all armed forces hospitals overseas. b. The hospitals of the Bureau of Indian Affairs. c. The hospitals of the Bureau of Prisons. d. Other small hospital functions such as those which are incident to the operations of the Tennessee Valley Authority and the Atomic Energy Commission. The Indian and prison hospitals, should, however, be assisted in procuring staff by professional personnel from the United Medical Administration. e. The U. S. Soldiers Home in Washington and the U. S. Naval Home in Philadelphia.

"For this plan to function, it must be accompanied by a clear definition by the Congress of the rights and priorities to medical care of all the various classes of beneficiaries."

Recommendation No. 5. "Congress should define the beneficiaries entitled to medical care from the government and prescribe how this care should be given."

Recommendation No. 6. "The present inconsistency in policy between the Federal Hospital Construction Program and Federal aid to non-Federal hospitals under the Hill-Burton Act should be ended."

Recommendation No. 7. "The control of medical policy in the armed services should be exercised by the Secretary of Defense."

Recommendation No. 8. "The United Medical Administration should give constant attention to necessary measures for national defense."

Recommendation No. 9. "Medical and other technical personnel in the Administration should be on a career service basis. The United Medical Administration should have full responsibility for recruiting, selecting, assigning, training, and otherwise handling its own professional and technical civilian personnel on the basis of standards determined by it but approved and enforced by the Civil Service Commission. It should make greater use of ancillary technical personnel."

Recommendation No. 10. "A survey should be made to determine the needs for emergency aid to medical schools.

"Many schools are in serious condition. Adequate facts on which to base the extent of, or to determine intelligently, the aid required are not now available. There should be a short-range survey immediately made by an independent commission appointed by the President to determine the real needs for emergency aid, amplified later by a longer range study period. Any aid must be given in a manner to maintain the professional independence and the initiative of the schools, and in a way which will increase the output and result, partially at least, in meeting especially acute current deficiencies."

Recommendation No. 11. "The highest priority in importance should be given to research, preventive medicine, public health, and education."

TAFT HEALTH BILL

On April 14, 1949, Senator Taft of Ohio (for himself, Senator Smith of New Jersey, and Senator Donnell of Missouri) introduced a bill, S. 1581, cited as "The National Health Act of 1949," the title to which reads as follows:

"To coordinate the health functions of the Federal Government in a single agency; to authorize grants to States for extending and improving the provision of medical, hospital, and dental services; to authorize grants to States for providing health examinations for school children and medical care and dental treatment in certain cases; to amend the Hospital Survey and Construction Act (title VI of the Public Health Service Act) to extend its duration and provide greater financial assistance in the construction of hospitals; to amend the Public Health Service Act to authorize grants to States and political subdivisions in the development and maintenance of local public health units; to authorize studies and grants for increasing available manpower in the health professions; and for other purposes."

The bill consists of seven titles.

Title I sets up an independent health agency in the executive branch and is essentially the same as that provided for in the Taft Bill of the 80th Congress (S. 545). The agency would be headed by an Administrator appointed by the President and must be a doctor of medicine. Five constituent units are prescribed: Office of the Administrator; the Public Health Service; the Office of Medical, Dental, and Hospital Services; the Office of Maternal and Child Health, with a special advisory council; and the Food and Drug Administration. The Director of the Office of Medical, Dental, and Hospital Services is required to be a doctor of medicine. The Advisory Council on Maternal and Child Health would consist of 8 members, at least 3 of whom must be doctors of medicine.

The National Health Agency would not include the health activities of the armed services and the Veterans Administration.

Title II relates to grants-in-aid for extending medical, hospital, and dental services to individuals unable to pay the whole cost thereof. This also is similar to S. 545 of last Congress. Part A. authorizes five million dollars to the States on a matching basis to finance surveys by the States of their existing medical, dental, and hospital services, both public and private. The surveys are intended to form a basis for State plans called for under Part B.

Part B. authorizes a total of one and a quarter billion dollars over a period of 5 years on a matching basis to the States under State plans (A) to provide, within 5 years, medical and hospital services without discrimination to all those families and individuals in the State unable to pay the whole cost thereof; (B) to provide dental services as far as practicable to such persons; (C) to encourage the development of medical, dental, and hospital insurance plans operated not for profit; (D) to provide for the establishment and staffing of general diagnostic facilities and the improvement of existing diagnostic facilities; and (E) to provide inducements to physicians and dentists to practice in areas which, without such inducements, would be unable to attract needed physicians or dentists. At the option of the State, the services may be provided in institutions, in the home, or in physicians' or dentists' offices. The services also may be furnished by means of payments of premiums or reimbursement of expenses by the State to any voluntary medical, dental, or hospital insurance plan or other plan operated not for profit. Not more than 25 per cent of the money may be used by the States to encourage voluntary nonprofit health insurance plans, establish and improve general diagnostic facilities, and provide inducements for physicians and dentists to practice in low income areas.

The State plan is required to provide that the State shall set standards for the services to be provided.

Title III provides for national school health services and is identical with S. 1411, except that the program at the Federal level would be under the Director of the Office of Medical, Dental, and Hospital Services. It would provide thirty-five million dollars on a matching basis to the States to provide periodic medical and dental examinations to school children and to provide treatment found by such examinations to be necessary where the child's family is unable to pay the whole cost. The State is empowered to set the standards for the services provided.

Title IV amends the Hill-Burton law and is essentially the same as S. 614. This title increases the amount and rate of Federal grants and extends the duration of the law.

Title V relates to local public health units and is essentially the same as S. 522. It authorizes appropriations to assist the States in establishing and maintaining adequately staffed and equipped local public health units for the provision of basic public health services.

Title VI provides for studies and grants for medical education. Part A. authorizes a commission to study and report by January 15, 1952, on the need for a long range program of aid for training in the health professions. Part B. authorizes payments during the fiscal years 1950, 1951, and 1952 to accredited schools of medicine of $500 for each enrolled student up to the schools' average enrollment in the previous 3 years and $750 for each student in excess of that average. The authors of the bill state that they will be glad to consider the inclusion of other schools in the temporary

program if evidence can be developed showing they are in serious difficulty.

Title VII is called miscellaneous. It encourages Federal civil employees to enter voluntary nonprofit health insurance plans by directing government departments to deduct, at the employees' request, the amount of the premium for any such plan from the employee's pay.

HILL HEALTH BILL

On March 30, 1949, Senator Hill of Alabama (for himself, Senator O'Conor of Maryland, Senator Withers of Kentucky, Senator Aiken of Vermont, and Senator Morse of Oregon) introduced a bill, S. 1456, cited as "The Voluntary Health Insurance Act."

The bill is in the form of an amendment to the Public Health Service Act, adding thereto a new title: "Title VII—Hospital and Medical Care," consisting of parts A, B, and C.

At the time of introduction of the bill, Senator Hill informed the Senate that the measure had been prepared with the counsel of Dr. Gibson Colby Engel, President of the Medical Society of Pennsylvania, and Dr. Paul Magnuson, Chief Medical Director of the Veterans Administration, and officials of the American Hospital Association.

Citing the growth of voluntary health insurance, the Senator pointed out that in 1939 when the first compulsory health insurance bill was introduced, the Blue Cross plans for hospital care had only 3 million people enrolled. Today they include more than 33 million. The Blue Shield plans for medical care have enrolled about 10 million. And commercial insurance companies have enrolled considerable numbers. A recent survey shows that on December 31, 1947, an estimated 52,584,000 individuals were protected by voluntary hospital expense coverage; 26,247,000 individuals had voluntary surgical expense coverage; nearly 9,000,000 had medical expense coverage; and an estimated total of 31,224,000 of our 58,000,000 employed civilians were insured under some form of voluntary protection against loss of income due to sickness or accident.

Senator Hill explained that the first and immediate purpose of the bill is to provide protection for people of limited income by giving them service cards, without identifying them as recipients of government assistance, in voluntary prepayment plans which will entitle them to the same kind of hospital and medical care as those who are able to purchase such protection on a voluntary basis. Another basic purpose of the bill is to encourage every citizen to protect himself against the costs of hospital and medical care through voluntary enrollment.

The bill is limited to care provided in a hospital or diagnostic clinic and does not cover mental illness, tuberculosis, and chronic disease.

Part A. of the new title contains the following definitions:

"For the purposes of this title—

"(a) The term 'hospital and medical care' means surgical, obstetrical and medical services, furnished in a hospital, and hospital services incident thereto, not in excess of sixty days in any year, and including diagnostic and out-patient clinic services furnished in a hospital or a diagnostic clinic.

"(b) The term 'hospital' includes any hospital which has an average patient stay of less than thirty days or any diagnostic clinic, which conforms to standards of maintenance and operation established by the State.

"(c) The term 'voluntary prepayment plan' means any nonprofit or other corporation or association furnishing protection against the cost of hospital and medical care on a voluntary prepayment basis.

"(d) The term 'nonprofit prepayment plan' means any corporation or association, no part of the net earnings of which inures or may lawfully inure to the benefit of any private shareholder or individual, furnishing protection against the cost of hospital and medical care on a voluntary prepayment basis.

"(e) The term 'State' includes Alaska, Hawaii, Puerto Rico, and the District of Columbia."

Senator Hill's statement points out: "Under the bill the control and administration of the program rests with the States and their communities, adapted to local needs and local conditions." That statement is not altogether clear, in view of the fact that part B, section 712 of the new title requires the Surgeon General, with the approval of the Federal Hospital and Medical Care Council and the Federal Security Administrator, to prescribe:

"(a) the general manner in which the State agency shall determine eligibility of persons unable to pay subscription charges for prepayment of hospital and medical care;

"(b) the general types of hospital and medical care which may be provided;

"(c) general standards for participation under this title of voluntary prepayment plans for hospital and medical care;

"(d) general standards for participation under this title of nonprofit prepayment plans;

"(e) the general manner in which the State agency shall stimulate and assist in enrolling the population in voluntary prepayment plans for hospital and medical care; and

"(f) general methods of administration of the State plan by the designated State agency, subject to the limitations set forth in section 713 (a) (7)."

And section 713 (a) (14) requires that each State plan shall "provide for furnishing such types of hospital and medical care to persons holding such service cards as may be required by regulations prescribed by the Surgeon General under section 712."

The bill provides for a Federal Hospital and Medical Care Council consisting of the Surgeon General and ten members appointed by the Administrator from among persons outstanding in or familiar with the need for hospital and medical care, at least two of whom are required to be doctors of medicine. The States would be required to set up Hospital and Medical Care Authorities consisting of the head of the State agency as chairman and ten others, including at least two doctors of medicine.

State plans are required to provide for a survey of existing diagnostic facilities and a plan for meeting needs for any additional facilities; a survey of existing facilities, services, and financing for the care of mental, tuberculous, and chronic disease patients, and a plan for meeting additional needs; a survey of areas in the State which are unable to attract practicing physicians "and recommend methods for encouraging physicians to practice medicine in such needy areas"; a survey of existing enrollment in participating voluntary prepayment plan and development of a plan for stimulating and encouraging enrollment in such plans by all persons able to pay subscription charges.

The costs of the program would be covered by Federal grants to the States on a matching basis.

VA OFFICES FOR MEDICAL SUPERVISION

On March 14 Veterans Administrator Carl R. Gray, Jr., announced the selection of five key points from which medical supervision of hospitals and other VA medical matters will be carried on. They are Atlanta, Boston, Fort Snelling, Minn., San Francisco, and St. Louis.

The Administrator said that the plan for medical supervision from these points resulted from the elimination of the thirteen Branch Offices of VA where medical activities have previously been under the direction of Branch Medical Directors. All functions of former branch office medical staffs are now centered in the office of the Chief Medical Director in Washington.

"In connection with medical matters handled in Washington," he pointed out, "it is necessary that we have representatives traveling throughout the country. For the sake of reduced travel expense and other economies, certain Central Office representatives will be stationed at strategic points, to serve as the eyes and ears of the Chief Medical Director.

Mr. Gray emphasized that "in no sense will these official stations become operating offices. They will simply be points from which Central Office personnel will travel."

The Administrator stressed that this change in supervisory activities will bring supervision of the Chief Medical Director closer to hospital and other medical activities in the field, thereby assuring maintenance of the finest medical service to veterans.

Current Medical Literature

SPINAL NERVE ROOT PAIN (RADICULITIS) SIMULATING CORONARY OCCLUSION: A COMMON SYNDROME

The *American Heart Journal*, January 1948, presented an article by David Davis, M.D., which should be of interest to every osteopathic physician as an additional bit of evidence of the increasing awareness on the part of members of the older school of medicine of the osteopathic lesion (although not called such by them) in causation of conditions apparently unrelated to the spine and of the value of manipulative therapy and as a contribution to the diagnosis of certain forms of atypical coronary disease. The article should be read in full.

During the course of 1946, Dr. Davis observed 56 patients with a syndrome of radiculitis of the thoracic spine with acute attacks of chest pain, often confined to the substernal or precordial regions, simulating and often mistaken for coronary artery disease. It was frequently severe and prolonged and was described as a pressure sensation, heaviness, viselike constriction, or expanding discomfort. It often radiated to the left arm, and at times it radiated to the neck, where it was felt as a choking sensation, and occasionally to the jaw. In a few instances severe attacks were associated with pallor and excessive sweating. These signs and symptoms, suggesting coronary disease, were frequently supplemented with characteristics of the radicular syndrome; attacks occurred (1) in bed at night, (2) after certain movements of the spine, such as bending, turning from side to side, or getting out of bed, and (3) after such acts as coughing, sneezing, or straining at stool. In some cases the pain was associated with certain postures and was relieved when the posture was changed. These facts were generally not volunteered by the patients but had to be elicited by careful questioning or by observation of subsequent attacks.

The cardinal symptoms of the radicular syndrome were not present in every case, and even when they were the diagnosis had to be based on additional data, most important of which was reproduction of attacks by pressure over thoracic vertebrae. Other signs and symptoms, such as poor posture, spasm of the posterior cervical muscles, and tenderness near the costochondral junctions of ribs and sternum were noted in many cases. In some cases the diagnosis was confirmed by the response to therapy consisting in postural correction, use of bed boards, performance of exercises, and, especially, manipulation and traction of the cervicothoracic spine.

Davis reports 10 of the 56 cases in detail. In all these cases the electrocardiographic tracing was either normal or only slightly abnormal. In one case x-rays of the cervical and thoracic portions of the spine showed the changes of advanced osteoarthritis, with narrowing of the intervertebral foramina of the third and fourth thoracic vertebrae. In two others, the changes of advanced hypertrophic arthritis were evident. In another, x-ray examination of the cervicothoracic portion of the spine showed hypertrophic changes, straightening of the cervical portion, slightly increased thoracic kyphosis, narrowing of the interspaces, and scoliosis to the left in the thoracic region. In a number of cases there was limitation of rotation of the head on the neck. In the cases in which it was used, orthopedic treatment (nature not always specified) brought prompt relief.

The occurrence of substernal pain as a result of sensory nerve root irritation is understandable, since the pain in coronary disease and in radiculitis are referred from the skin along the same path. According to the theory, the irritable focus in coronary disease is in the cord and in radiculitis in the nerve root itself. Hence it is not surprising that the pain of radiculitis has the location, distribution, and characteristics of coronary pain. The roots generally involved in chest pain are the second to seventh thoracic, but in these cases it was noted that when symptoms were elicited by pressure over a given vertebra the pain was not necessarily in the segmental distribution of the root. Davis explains this by the fact that pressure over one portion of the spine can produce nerve root irritation at some distance from the pressure region. Pain over the precordium is produced by irritation of the fourth thoracic root, but in one of the present cases it could be elicited by pressure at any point from the second to the seventh thoracic vertebra.

Among the old-school writers who have called attention to the relation between spinal arthritis and radiculitis, Kountz and Smith particularly stressed the importance of postural defects, mentioning straightening, stiffening, and kyphosis with markedly decreased movement of the spine. Many of Davis' patients had postural changes, and some gave a history of low-back pain.

Since osteoarthritis of the spine is usually generalized and postural strain is frequently transmitted to other parts of the spine, it is not surprising that some of these patients had symptoms of cervical radiculitis in addition to chest pain. Cervical symptoms—suboccipital headache, vertigo, pain and stiffness of the neck with limitation of rotation of the head—associated with chest pain should cause the physician to suspect thoracic radiculitis.

Many of the patients complained of a peculiar respiratory difficulty, consisting in inability to take a deep breath and, at times, rapid and shallow respiration, during acute attacks. In some, these symptoms could be provoked by pressure over the thoracic spine. They may occur as the presenting complaint in attacks, with little or no chest pain, when they may be mistaken for cardiac asthma. One patient with such attacks was completely relieved of symptoms within a few days after traction treatment was begun, and there had been no recurrence during a year.

Since coronary disease and hypertrophic arthritis of the spine with radicular symptoms may occur in the same patient, the physician considering a patient for treatment of the latter condition should not neglect the former.

In general, the diagnosis of thoracic radiculitis is not difficult if the physician considers it in differential diagnosis. If chest pain can be reproduced by pressure over the thoracic spine or by forced rotation of the head, the diagnosis is established. Some patients do not show this sign, however, particularly after the acute phase has passed; if their attacks have occurred at night while they were in the reclining position, during bending, or after prolonged sitting, the radicular syndrome should be suspected. If the history is less suggestive, the diagnosis may be determined by the therapeutic response. The diagnosis is more difficult in cases in which there is a history of atypical angina pectoris in addition to substernal pain; if the pain does not occur exclusively on exertion, lasts longer than that of early angina pectoris, and does not cease immediately on resting, radiculitis should be considered. In several of these cases the prompt relief obtained by "straightening up" and throwing the shoulders back was of diagnostic value.

The fact that one author encountered 56 cases of this syndrome in a year indicates that the condition is not unusual and should be looked for, since many of the patients are thought to have coronary disease, their activities are curtailed, and their lives are handicapped by fear of an impending attack.

THE TREATMENT OF BURNS WITH PARTICULAR REFERENCE TO LOCAL CARE

Michael L. Mason, M.D., writing in *Industrial Medicine*, February, 1949, describes in detail the management, particularly the local management, of burned patients. He states that burns are essentially open wounds characterized by tissue destruction and loss of blood volume; these two factors determine the indications for primary treatment. In case of a small burn, management of the open injury is the main consideration, since the patient is not likely to suffer general symptoms or go into shock; in case of a severer burn, latent or developed shock is present when the patient is first seen and must receive first attention.

The aim in initial local treatment of a burn is to convert the open wound into as clean a wound as possible, protect it from bacterial contaminants, and promote its rapid healing. Since it is impossible to judge the exact extent of a burn when it is first seen, the initial treatment must be extensive, regardless of the apparent severity of the burn. The burned area probably contains few virulent bacteria immediately after the injury, and if it is covered at once with a sterile or clean dressing there should be minimal secondary contamination; serious wound contaminants usually come from the nose, throat, and hands of persons who inspect the burned surface. The fresh burn is converted into a surgically clean surface by gentle washing with soap and water and irrigating with saline solution and removal of charred skin and blisters, under aseptic conditions and as rapidly as possible. The dressing which is then applied should prevent contamination, should exert firm resilient pressure, should not harm the tissues, and should be easily removable. There seems to be no advantage to incorporation of drugs into the dressing to control bacterial contaminants. The cleansed surface is covered first with a layer of fine mesh gauze saturated with petrolatum or other bland substance. Over this are placed several thicknesses of flat gauze moistened with normal saline solution; these are covered with large amounts of fluffed gauze or mechanic's waste; abdominal pads are placed over this, and the dressing is bandaged on snugly with elastic bandage or stockinette. The dressing, which must be voluminous, snug, firm, and evenly applied without constriction, should cover an area well exceeding that of the burn. Dressings on the extremities should usually cover the hands and feet, even though they are not actually burned; gauze should be placed between the digits before they are covered; and the extremities should be splinted with the joints in the optimum position. Anesthesia is usually contraindicated for the cleansing and dressing of the burn; if the cleansing is done in a warm draft-free room, few patients complain of pain; small children may require a small dose of morphine or a barbiturate. Except for burns of the face, the initial dressing is not changed for 10 or 12 days, even if it becomes soaked through; it is inspected every day and snugged up and reinforced with additional pads when necessary. Dressings on face burns may usually be changed after 4 or 5 days; unless there are granulating areas, dressings may then be dispensed with. Sterile mineral oil may be helpful on the dry crusted areas after a few days of open treatment.

When dressings are removed after 10 to 12 days, mixed second and third and third degree burns are covered with a slough varying in thickness according to the depth of the burn. Some of the slough should be removed at this change of dressings, and the rest should be removed during the next 8 to 10 days so that the surface will be ready for grafting not later than the end of the third week. A split graft should be applied to a site as soon as it is ready; it is not necessary to wait until the entire burn surface is converted to a clean granulating area before grafting is begun. Very deep sloughs which are slow to separate may be excised under anesthesia on the seventh to tenth day, and two to five days later the areas are ready for grafting. Tetanus antitoxin (or toxoid if the patient is already immunized) is always given. Antibiotics, particularly penicillin, may be given in large doses parenterally.

Generally management of the burned patient is as important as the local care. Persons with burns of 5 per cent or less of the body surface generally need only local care of the wound, and some with burns covering 10 to 15 per cent of the surface do not need general therapy; but it should be remembered that children and old people do not tolerate burns well and may go into shock with burns of 10 per cent of the body surface. General therapy is based on the fact that loss of blood volume is the most important factor in burn shock, due to increased capillary permeability during about 48 hours after the injury, and that fluids must be administered in amounts equal to fluid loss plus normal fluid requirements. These amounts are ordinarily larger than would be expected, and, to make certain that enough fluid is supplied, the physician should keep careful and continual watch for signs of dehydration; thirst is a good guide. The fluid administered should contain molecules which do not pass too readily thrugh the capillary walls; electrolyte solutions contain too small molecules and are soon lost. Plasma is generally considered the best replacement fluid, but Mason recommends administration of whole blood, since it gives the patient a good start toward correcting the severe anemia and hypoproteinemia which characterize extensive burns; he generally gives 500 to 1,000 cc. of whole blood each 24 hours, making up the rest of the requirement with plasma. In case of a very severe burn, plasma administration should be well under way at the time that the burn toilet is begun. Enough electrolyte solution should be given by mouth to maintain proper electrolyte balance, control thirst, and permit a daily urine excretion of 1,200 to 1,500 cc. A protein- and vitamin-rich diet providing 4,000 to 5,000 calories a day should be fed as soon as shock has been brought under control, to counteract the tendency toward anemia and hypoproteinemia.

RHEUMATOID SPONDYLITIS: ITS EARLY DIAGNOSIS AND MANAGEMENT

Rheumatoid spondylitis is the designation recommended by the American Rheumatism Association for the condition generally known as rheumatoid arthritis of the spine, a commonly encountered cause of backache, particularly that occurring among boys and men in the second and third decades of life. In the *Journal of the American Medical Association*, March 12, 1949, Richard Z. Query, Jr., M.D., discusses this disease, its diagnosis and management on the basis of a small series of 32 personally observed cases. These patients were 4.9 per cent of all new patients seen during the 2 year period. Twelve of the 32 were women, a sex incidence higher than that usually reported; but, since the diagnostic criteria were closely observed, Query feels that he was not overenthusiastic in diagnosing the condition in women.

Rheumatoid spondylitis is a chronic, usually progressive, inflammatory disease of the synovial joints of the spine and the adjacent soft tissues; its origin is unknown. It almost always begins in the sacroiliac joints and usually progresses to involve the synovial joints of the lumbar, thoracic, and cervical regions and the costovertebral articulations. The joint changes consist of synovitis, chondritis, juxta-articular osteitis, and ankylosis. Painful spasms and contractures occur in the paravertebral muscles, and as the disease progresses the paraspinal ligaments show calcification and, later, ossification. The intervertebral disks are not affected.

This is one of the most prevalent and most crippling of the chronic diseases affecting the spine. Unfortunately, the diagnosis is often missed for several years after onset, and by the time that the correct diagnosis is made it may be too late for good therapeutic results. Early diagnosis should not be difficult if the physician is familiar with the characteristic clinical and roentgenographic features of the disease. The usual initial complaint is of ache, soreness, and stiffness in the lower part of the back, generally worse after inactivity and improved after activity; the symptoms are generally aggravated by inclement weather and are frequently worse before changes in the weather. Early in the disease the symptoms are mild and of only a few days' duration, but later they tend to become persistent. In some cases the onset is acute, with sudden disabling low-back pain ("lumbago"), sciatica, thoracic girdle pains, or inguinal and thigh pains; in these cases, however, close questioning will usually reveal previous low-back symptoms, perhaps of mild character. As the disease progresses, the lower part of the back becomes less mobile, and the patient notices that he cannot bend forward so readily or so completely as formerly. With involvement of the thoracic portion of the spine, thoracic girdle pain or chest pain on forced inspiration, coughing, or sneezing often occur; and with involvement of the cervical portion the neck becomes stiff, motion is limited in all directions and the head is often protruded forward.

When the disease is localized to the sacroiliac joints, the most frequently observed physical findings are (1) tenderness and pain over the joints on palpation and first percussion and precipitation of pain on motion or stretching of the sacroiliac joints; and (2) possible lumbar muscle spasm; motion of the spine may not be discernibly affected. With extension to the

joints of the lumbar portion of the spine, there are decreased lumbar lordosis, paravertebral lumbar muscle rigidity, limitation of lumbar motion, and atrophy of lumbar muscles. With thoracic involvement there may be pronounced postural deformity unless measures have been instituted to prevent its development; chest expansion is diminished, the anterior chest wall is flattened, and thoracic kyphosis develops. There is tenderness to percussion over or just lateral to the thoracic spinous processes. Motion of the thoracic portion of the spine is limited, and there is spasm and/or atrophy of the muscles of this region. When the cervical region becomes involved, there are pain on forced motion and tenderness on palpation and percussion over the posterior aspect of the neck.

Roentgen changes may be slow in developing, but they are characteristic. The earliest are manifested by blurring or haziness of the joint margins; later the margins appear irregularly mottled or serrated, and there may be increased density, spotty osteoporosis or both of the juxta-articular portions of the sacrum and ilium. When the thoracic region is involved, there may be calcification of the paraspinal ligaments, varying from a fine penciling of calcium in the anterior ligament to extensive deposits and ossification, leading to the well-known "bamboo spine." Laboratory examinations give little specific help in diagnosis.

There is no known specific cure for the condition, but if treatment is started early and continued faithfully much can be done toward preventing, and even correcting, spinal deformity. Therapy should consist in maintenance of a good general condition, regulation of rest, diligent performance of deep breathing and postural exercises, appropriate physical therapy procedures, and x-ray therapy (generally 200 kv. tension, 0.5 mm. copper plus 1 mm. aluminum filtration, 200 roentgens (air) per portal every day for three doses) to the actively involved spinal segments.

DANGER OF DICUMAROL TREATMENT IN PREGNANCY

The increasing use of dicumarol for prevention and treatment of thrombosis and embolism makes desirable a definite answer to the question whether this drug when given to a pregnant woman has a deleterious effect on growth and development of the fetus. Alfred P. Kraus, M.D., and others performed experiments on rabbits to attempt to answer this question, and they report their findings in the *Journal of the American Medical Association,* March 19, 1949. The investigation was undertaken to determine the influence of dicumarol both on the newborn rabbits and on the intrauterine growth and development of the fetuses.

The results of the investigation seem to indicate that prothrombin passes the placental barrier. Of 4 animals kept on "safe" prothrombin levels (i. e., above 10 per cent) during administration of dicumarol, 3 delivered normally and showed no evidence of either intrapartum or postpartum bleeding; the fourth aborted on the twenty-first day and died 5 days later. In the young of these rabbits there was extreme depression of the prothrombin level at birth and a definite hemorrhagic tendency; the longest survival was 5 days. A few of the fetuses died in utero. The depression of prothrombin level was much more pronounced in the young than in the mothers. When toxic doses of the drug were given (reducing the prothrombin level below 10 per cent of normal), none of the mothers survived delivery and the fetuses did not survive until delivery; the latter were small, showing conspicuous maceration of the skin and decomposition of the organ tissues.

From these results the authors conclude that dicumarol is a dangerous drug when given during pregnancy, producing extremely low prothrombin levels and, subsequently, serious hemorrhagic disease of the newborn. Prothrombin levels below 10 per cent for 2 days—perhaps even less—may irreversibly injure the fetus. Prothrombin values below this point cannot be avoided with certainty because of the unpredictable occurrence of a hyperreactive response.

Although it is true that results of animal experiments may not be applicable to human patients, the similar responses in rabbits in this experiment to those in dogs and cattle reported by other investigators strongly suggest similar reactions in human patients. Hence it seems that dicumarol treatment is not advisable during pregnancy, since it may seriously interfere with the normal development of the fetus or cause fetal death.

CRANIOFACIAL MORPHOLOGY IN CLEFT PALATE AND CLEFT LIP DEFORMITIES

In dealing with such congenital defects as cleft palate and cleft lip, the surgeon starts with an abnormal pattern of obscure origin, unknown development, and questionable prognosis, and he is further hampered by the fact that, despite early institution of therapy, appraisal of results is not possible before the patient's maturity. Before definite criteria for success and failure can be established, a number of questions must be answered: Why are there such wide variations in facial appearance among patients with cleft palates? Are ultimate results different for different surgical technics and timings? Can fibrous bands of scar tissue, resulting from soft tissue repair, hold back growth and development? How does the developmental pattern in patients operated on differ from that in patients not operated on? In *Surgery, Gynecology and Obstetrics,* March, 1949, T. M. Graber, D.D.S., M.S.D., reports some results in a continuing study of the developing aberration to try to answer these questions.

The subjects for this investigation were 45 patients with cleft palates, ranging in age from 7 months to 58 years, selected at random except for some attempt to include patients not operated on as well as patients operated on. Their deformities varied from simple alveolar clefts to complete bilateral clefts of lip and palate. Plaster casts, photographs, and a series of head roentgenograms were taken of each patient, and criteria were set up for determining facial characteristics.

Certain facts seem to be revealed by this study. (1) In patients with cleft lip and cleft palate, growth of the maxilla is deficient in anteroposterior, lateral, and vertical directions. When the teeth are in occlusion, the vertical maxillary deficiency causes the upper part of the face to make an abnormally great contribution to total face height. Lack of anteroposterior development is shown by the high negative angle of convexity. (2) Persons with cleft palate have a larger intermaxillary clearance than do normal persons, and the variation from normal is particularly noticeable in persons in whom a complete cleft has been corrected surgically. This fact seems to suggest that while there is a bone deficiency the general musculature, except the muscles involved in the surgical procedures, attempts to maintain a normal developmental pattern and relation of parts. (3) In most cases mandibular growth is normal, but lack of development is apparent in some cases. Such mandibular underdevelopment may be actually advantageous, by reducing the disharmony resulting from underdevelopment of the maxilla and thus improving facial balance. Mandibular overclosure, allowed by excessive intermaxillary clearance, is a consequence of the maxillary deficiency. (4) There is an excessive lingual axial inclination of the lower incisors to the mandibular plane. This may be explained on the basis of a hypertonic orbicularis oris muscle complex; tightness of the upper lip is reflected through decussating fibers to the lower lip, which is in constant contact with the dental units. The lingual positioning of the lower incisors reduces the extent of the underjet (distance that the maxillary incisors are abnormally posterior to the lower anterior segment). (5) The maxillary first molar tends to assume a posterior position with reference to craniometric landmarks outside the maxilla. (6) With regard to the propriety of closing cleft palates early in life, the study seems to offer convincing proof that early surgical correction limits the growth potential of the maxillary denture in some cases if tissues which should be free to expand and develop are confined and restricted in heavy unyielding suture material and subsequent scar tissue. In general, the greater the number of operations the more pronounced is the deviation from normal. (7) The clinical results of orthodontic treatment, although improving the tooth relationship in many cases, do not necessarily stimulate basal bone development. Therapeutic results that are unstable must be maintained indefinitely.

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Third Annual Meeting, St. Louis, July 11-15, inclusive. Program Chairman, K. R. M. Thompson, Chicago.

Academy of Applied Osteopathy, Hotel Jefferson, St. Louis, July 15, 16.

Advisory Board for Osteopathic Specialists, Hotel Statler, St. Louis, July 10-12.

American Association of Osteopathic Colleges, Hotel Jefferson, St. Louis, July 8, 9.

American Association of Osteopathic Examiners, Hotel Statler, St. Louis, July 12.

American College of Neuropsychiatrists, Still-Hildreth Sanatorium, Macon, Mo., July 7-9.

American College of Osteopathic Obstetricians and Gynecologists, Hotel Statler, St. Louis, July 8, 9.

American College of Osteopathic Surgeons, Statler Hotel, Detroit, October 9-13. Program Chairman, Karnig Tomajan, Boston.

American Osteopathic Board of Dermatology and Syphilology, St. Louis, July 9.

American Osteopathic Board of Neurology and Psychiatry, Still-Hildreth Sanatorium, Macon, Mo., July 7-9.

American Osteopathic Board of Obstetrics and Gynecology, Hotel Statler, St. Louis, July 8, 9.

American Osteopathic Board of Ophthalmology and Otolaryngology, Columbus, Ohio, October 11-14.

American Osteopathic Board of Pediatrics, Hotel Statler, St. Louis, July 8, 9.

American Osteopathic Board of Proctology, St. Louis, July 9.

American Osteopathic Board of Radiology, Detroit Osteopathic Hospital, Detroit, October 6, 7.

American Osteopathic Board of Surgery, Hotel Statler, St. Louis, July 7-9; October 9-11, Detroit.

American Osteopathic College of Proctology, Hotel Statler, St. Louis, July 12.

American Osteopathic College of Radiology, Hotel Statler, Detroit, October 9-11.

American Osteopathic Hospital Association, Hotel Statler, Detroit, October 9-12.

American Osteopathic Society for Study and Control of Rheumatic Disease, Hotel Statler, St. Louis, July 9.

Arkansas, Albert Pike Hotel, Jonesboro, June 3-4. Program Chairman P. W. Lecky, El Dorado.

Association of Osteopathic Publications, Hotel Jefferson, St. Louis, July 9.

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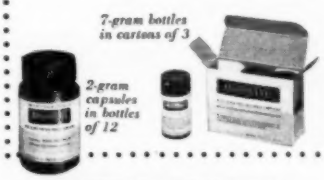

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*Reich, Button and Nechtow, "Treatment of Trichomonas Vaginalis Vaginitis," Surgery, Gynecology and Obstetrics, May 1947, pp. 891-896

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Auxiliary to the American Osteopathic Association, Hotel Jefferson, St. Louis, July 10-15.

British Columbia: See Northwest Osteopathic Convention.

Florida and Georgia, Princess Issena Hotel, Daytona Beach, June 6, 7.

Georgia: See Florida.

Idaho: See Northwest Osteopathic Convention.

Iowa, Hotel Fort Des Moines, Des Moines, May 14-17.

Kansas, Topeka, October 1-5. Program Chairman, Thomas O. Osborn, Colony, and Harvey H. Steffen, Wichita.

Kentucky, Brown Hotel, Louisville, October. Program Chairman, Martha E. Garnett, Louisville.

Maine, annual meeting, Belgrade Lakes, June 16-18; midyear meeting, Bangor, November 5, 6.

Michigan, Grand Rapids, October 30-November 3.

Minnesota, Breezy Point, June 3, 4.

Missouri, Hotel Continental, Kansas City, September 27-29.

National Board of Examiners for Osteopathic Physicians and Surgeons, Hotel Statler, St. Louis, July 10.

National Osteopathic Interfraternity Council, Hotel Jefferson, St. Louis, July 11.

New Jersey, midyear meeting, Trenton, September 10, 11.

New Mexico, LaFonda Hotel, Santa Fe, September 8-10.

New York, Hotel Arlington, Binghamton, October 14, 15. Program Chairman, Charles K. Smith, Elmira.

North Dakota, Minot, May. Program Chairman, George Lofthus, Bowbells.

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Northwest Osteopathic Convention (Oregon, British Columbia, Washington, Idaho), Multnomah Hotel, Portland, Ore., June 13-15. Program Chairman, H. D. Groves, Portland, Ore.

Ohio, Deschler-Wallick Hotel, Columbus, May 23-25; midyear meeting, Cincinnati, November 9, 10.

Oklahoma, Mayo Hotel, Tulsa, October 18-20. Program Chairman, E. C. Baird, Tulsa.

Oregon: See Northwest Osteopathic Convention.

Osteopathic Academy of Orthopedists, Statler Hotel, Detroit, October 9-13.

Osteopathic College of Ophthalmology and Otorhinolaryngology, Fort Hayes Hotel, Columbus, Ohio, October 11-15.

Osteopathic Vocational Group of Rotary International, Hotel Statler, St. Louis, July 14.

Osteopathic Women's National Association, Hotel Statler, St. Louis, July 10 and 12.

Rocky Mountain Conference (Colorado), Broadmoor Hotel, Colorado Springs, November 11-13.

Society of Divisional Secretaries, Hotel Jefferson, St. Louis, July 8-9.

South Dakota, Alonzo Ward Hotel, Aberdeen, June 5-7.

Texas, San Antonio, April 28-30. Program Chairmen, Gordon Beckwith and H. H. Edwards, San Antonio.

Utah, Logan, July 1, 2.

Vermont, Randolph, October 5, 6. Program Chairman, Edward T. Newell, Rutland.

Virginia, Williamsburg Lodge, Williamsburg, May 20, 21. Program Chairman, Fred A. Gedney, Richmond.

Washington: See Northwest Osteopathic Convention.

West Virginia, Hotel Pritchard, Huntington, May 15-17. Program Chairman, Robert B. Thomas, Huntington.

Wyoming, Laramie, June 4, 5.

OFFICIAL AND AFFILIATED ORGANIZATIONS

ARIZONA

State Society

The program announced in advance for the annual meeting to be held at Tucson May 6-8 included speeches by the following: T. J. Ruddy and Joseph O. Costello, both of Los Angeles; George C. Widney, Albuquerque, N. M.; Thomas Schooley, Phoenix; and A. T. Still, Macon, Mo.

Miricopa County

At the meeting in Phoenix March 13 the following officers were elected: President, Samuel E. Taylor; vice president, D. H. Simpson, both of Phoenix.

R. O. McGill, Phoenix, is trustee.

Tucson

Mr. John Bykerk of the Industrial Commission of Arizona spoke at the meeting at Tucson March 3.

CALIFORNIA

Alameda County

The pathology of the female pelvis was discussed by Robert P. Morhardt, South Pasadena, at the meeting February 12 at Fresno.

W. Ballentine Henley, president, COPS, Los Angeles, was to speak at the meeting scheduled to be held March 10.

Kern County

Mr. Ray Nettleship of The Nettleship Co. spoke on medicolegal problems at the meeting at Bakersfield February 8.

Los Angeles City

A brief history of the growth of osteopathy in California was given by Edward S. Merrill, Venice, at the meeting at Los Angeles February 14.

Pasadena

Julian Lansing Mines, III, Long Beach, spoke on the endocrine aspect of obstetrics and Thomas Mallard, Pasadena, spoke on the midwinter educational meeting at the meeting at Pasadena February 17.

FLORIDA

St. Petersburg

The officers are: President, Ray Wunderlich; vice president, Donald G. Perry; secretary-treasurer, Joseph L. Locke, all of St. Petersburg.

Basil Martin, St. Petersburg, is in charge of arrangements.

IDAHO

State Society

See Northwest Osteopathic Convention under Special and Specialty Groups.

Boise

Lawrence H. Jones, Ontario, Ore., presented a film on the osteopathic lesion and led the discussion which followed it at the meeting at Nampa March 17.

ILLINOIS

State Society

The program announced in advance for the annual meeting to be held April 29-May 1 at Chicago included the following: "Osteopathy as a Science" and "Correlation of Cranial Osteopathy with General Osteopathy," G. A. Baird, Hiawatha, Kans.; "Diagnosis and Treatment of Acyanotic Types of Congenital Heart Disease" and "Diagnosis and Treatment of the Cyanotic Types of Congenital Heart Disease," Earl Congdon, Flint, Mich.; "Osteopathic Care of the Aged" and "Geriatrics," Samuel V. Robuck, Chicago; "The Diamond Jubilee of Osteopathy," Mr. Lewis F. Chapman, director, Osteopathic Progress Fund, Chicago; "Random of Therapeutics" and "Observations on the Care of Traumatic Joints," C. Robert Starks, Denver; "Educating Our Youth for the Professions," Mr. Noble W. Lee, dean, John Marshall Law School; "Progress of Public Health in Illinois," Roland R. Cross, M.D., Director of Public Health, State of Illinois; "Physical Medicine Rehabilitation in Veterans Administration Hospitals," George B. Benson, M.D., chief, Physical Medicine Rehabilitation, Veterans Administration; "Clinical Pathological Conference," William Loos, Chicago; "The Coach, the Player, and the Physician in the Treatment of Athletic Injuries," Warren G. Bradford, Dayton, Ohio.

District One (Chicago)

Martin C. Beilke, Chicago, spoke on Glenard's syndrome at the meeting at Chicago April 7.

A meeting is scheduled to be held May 5.

District Eight

The officers are: President, John E. Schuman, Centralia; vice president, Paul Sutton, Olney; secretary-treasurer, John G. Switzer, Vandalia.

David Waterbury, Marion, is trustee.

INDIANA

State Society

The program announced in advance for the annual meeting to be held at South Bend May 15-17 included the following: "The Somatic Component in Disease" and "Preventive Medicine of Tomorrow," I. M. Korr, Ph.D., Kirksville, Mo.; "General Discussion of Radiological Interpretation As an Aid to Improving Diagnosis and Treatment by the General Practitioner," F. A. Turfler, South Bend; "Low-Back Problems and Their Diagnostic Management," Martin C. Bielke; "The Future of the Osteopathic Profession," R. C. McCaughan, both of Chicago; "What Makes a State Organization Successful," Mr. William S. Konold, Columbus, Ohio.

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IOWA

State Society

The program announced in advance for the annual meeting to be held May 14-17 at Des Moines, included the following: "Psychology and the General Practitioner," Edwin F. Peters, Ph.D., president, DMS, Des Moines; "Problems of Our State Hospitals," Charles C. Graves, M.D.; "Cardiology," G. A. Whetstine, Wilton Junction, and K. M. Dirlam, Des Moines; "Prostate," E. F. Leininger; "Intestinal Obstruction," H. Graney; "Proctology," B. E. Poundstone; "E.N.T.," Verne Wilson; "X-Ray," Byron L. Cash and T. Bruce Farmer; "Alcoholism," F. J. McAllister; "Uterine Hemorrhage," R. B. Bachman, all of Des Moines.

District Three (Southeastern)

The officers are: President, George W. Sutton, Mount Pleasant; secretary-treasurer, Georgia Chalfont, Oskaloosa.

District Five

Lawrence W. Abbott, Sioux City, spoke on "Breech Presentation and Delivery" at the meeting at Sioux City in February.

KANSAS

Topeka

The officers are: President, Joseph W. Stella; vice president, C. E. Brown; secretary-treasurer, Mary Zercher, all of Topeka.

The committee chairmen are: Membership, Dr. Zercher; ethics and industrial and institutional service, E. Claude Smith; hospitals and vocational guidance, D. A. Bragg; clinics, C. B. Brown; legislation, Roy Brown;

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statistics and convention program, Genevra E. Leader; convention arrangements and public relations, Dr. Stella; public health, W. S. Briscoe, all of Topeka.

MAINE

Knox-Lincoln-Waldo (Tri-County)

The officers are: President, Sherwood Armstrong, Camden; vice president, Robert J. Meehan; secretary-treasurer, James P. Kent (re-elected), both of Rockland.

Charles DiPerri, Wiscasset, Paul Cushman, Boothbay Harbor, and Edwin L. Scarlott, Rockland, are trustees.

Penobscot County

The officers are: President, Edward Ropulewis, Old Town; vice president, Clifford Larlee; secretary-treasurer, Martha A. Gifford (re-elected), both of Bangor.

MASSACHUSETTS

Connecticut Valley

"Cardiac and Bronchial Asthma" was presented by Bernard H. Hillman, Springfield, at the meeting March 15 at Springfield.

Middlesex South

Myron Barstow, Boston, spoke on "Low-Back Disabilities" at the meeting at Cambridge March 10.

Mystic Valley

At the meeting at Wellington Circle March 2, Raymond W. Boyd, Lynn, spoke on "Trends in Socialized Medicine."

MICHIGAN

State Society

The program announced in advance for the spring refresher course scheduled for April 29, 30 at Detroit included the following: "Speech Defects in Children," Wilbur C. Moore, Ph.D., Central State Teachers College, Mt. Pleasant; "Raw Food Vitamins and Bone Calcium," Royal Lee, D.D.S., Lee Foundation for Nutritional Research, Milwaukee, Wis.; "Medical Jurisprudence," H. William Butler, LL.B., Detroit; "Dorsal and Lumbosacral Mechanics," Edmund A. Bowman, Detroit; "Athletic Injuries," J. Vincent Murphy, Grand Blanc; "Shoulder and Cervical Mechanics," William A. Ellis, Grand Rapids; "Cranial Mechanics," Alan R. Becker, Jackson; "Athletic Injuries," Raymond D. Forsyth, Detroit; "Cranium and Posture," W. Powell Cottrille, Jackson; "Normal Technic of Delivery," James G. Matthews, Highland Park; "Treatment of Threatened and Habitual Abortion," Charles K. Norton, Royal Oak; "Rationale of Indications for Cesarean Section," Howard E. Rohleder, Garden City; "State Affairs," Harry P. Stimson, Highland Park; "The Surgeon and His Referred Practice," Emmett Binkert, Carson City; "Urological Problems for the General Practitioner," Ellis Siefer, Chicago; "The Rheumatic Heart of Childhood," Ralph Lindberg, Detroit; "Cancer Problems in Relation to Dermatology," A. P. Ulbrich, Highland Park; "Regulation for the Control of Communicable Diseases in Michigan," Fred S. Leeder, M.D., State Health Department, Lansing.

East Central

R. N. MacBain and Mr. Lewis Chapman, director, Osteopathic Progress Fund, A.O.A., both of Chicago, spoke at the meeting at Flint March 16.

Eastern

The officers are: President, John Zuzga, Sebewaing; vice president, Lanson C. Cobb; secretary-treasurer, William C. Scully, both of Marine City.

Dr. Cobb is program chairman.

Kent County

The officers were reported in the March JOURNAL.

The committee chairmen are: Public Health, Howard Gault; maternal and child health, James Porcelli; membership, Louis M. Monger; ethics, W. H. Bethune; hospitals, D. L. Cummings; clinics, Howard O. Messmore; statistics, Ellen Van Allsburg; legislation, Roy G. Bubeck; vocational guidance, Robert O. Drews; industrial and Institutional service, C. McLaughlin; public relations, Maurice Lee; insurance, Owen Rice, all of Grand Rapids.

Southeast

Movies on "Animated Hematology" were shown by Ira C. Rumney, Ann Arbor, at the meeting at Monroe March 19.

Western

Mr. Morris Thompson, president, KCOS, Kirksville, Mo., Mr. Lewis Chapman, E. H. McKenna, both of

Chicago, and Walter Stribley, Milan, spoke on the Osteopathic Progress Fund and the need for increased facilities in all the osteopathic colleges at the meeting at Muskegon March 9.

MISSOURI

Central

L. M. Garner, M.D., director, Department of Child Hygiene, State Division of Health, spoke on "State Board of Health Policies" at the meeting at Paris March 17.

Northeast

"Pathologies of the Stomach" was presented by Richard Orendorf, Kirksville, at the meeting at Memphis in March.

St. Louis

At the meeting March 15 at St. Louis, Anthony Scardino, Kansas City, spoke on dermatology.

West Central

Quintos W. Wilson, Kansas City, spoke on "New Methods of Glandular Diagnosis and the Results of Implants in Hypogonadism" at the meeting at Belton March 16.

NEBRASKA

State Society

Hooker N. Tospon, St. Joseph, Mo., discussed diagnosis of chronic low-back disturbance and the care and management of fractures, and E. J. Gross, St. Joseph, Mo., spoke on pitfalls in the lack of prenatal care at the quarterly meeting at Omaha March 20.

NEW YORK

Rochester District

Gordon C. Coryell, East Rochester, was to speak on "Manipulation Under Anesthesia" at the meeting at Rochester March 17.

OKLAHOMA

Northwestern

George J. Conley, Kansas City, Mo., spoke on "Osteopathy, Past and Present" at the joint meeting with the South Central District March 24 at Kingfisher.

South Central

See Northwestern.

OREGON

State Society

See Northwest Osteopathic Convention under Special and Specialty Groups.

Willamette Valley

"The Shoulder Girdle" was presented by D. E. Reid, Lebanon, at the meeting March 12 at Salem.

R. M. Gordon, Salem, is to speak at the meeting scheduled to be held May 14 at Eugene.

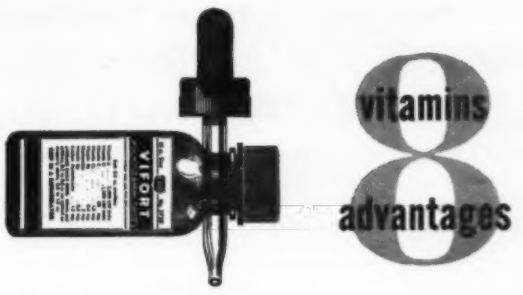
SOUTH DAKOTA

State Society

Harry Homewood, Valley City, is acting president, taking the place of George Lofthus who resigned.

North East

A talk and demonstration of osteopathic technic was to be presented by E. W. Hewlett, Sioux Falls, at the meeting at Watertown March 20.



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South East

F. E. Burkholder, Sioux Falls, was to speak at the meeting at Sioux Falls March 20.

TENNESSEE

State Society

The officers were reported in the March JOURNAL.

J. Allan Johnson, Bristol, L. D. Chesemore, Paris, H. Perry Bynum, Memphis, and R. Alexander, Greenback, are trustees.

The committee chairmen are: Legislation, Dr. Chesemore; veterans' affairs, George Hall, Kingsport; Federal-state coordinator, Helen Godat, Nashville; industrial and institutional service, Walter Baker, Memphis; editorial contact, radio and publicity, J. M. Moore, Jr., Trenton; membership, R. C. Hart, Chattanooga; vocational guidance, Mary Davis, Memphis; labor contact, Richard Broughton, Chattanooga; censorship and ethics, Mildred Alexander, Greenback; education, Ernest Bechtol, Clinton; public and professional welfare, Stanley Pettit, Cleveland; hospitals, J. N. Gill, Chattanooga; Osteopathic Progress Fund, Dr. Johnson.

TEXAS

State Society

The program announced in advance for the annual meeting scheduled at San Antonio April 27-30 included the following: "Application of Physiological Structural Mechanics," "Gravitational Approach to Structural Diagnosis," and "Manipulative Procedure in Degenerative Diseases," C. R. Nelson, Ottawa, Ill.; "Nervous Indigestion and Pain," "Poliomyelitis" (illus-

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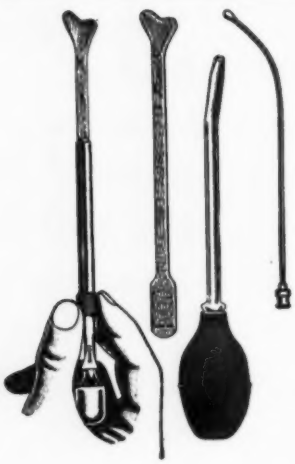

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Ref.: J. Ernest Ayre, M.D., Montreal, Canada. "Diagnosis of Preclinical Cancer of the Cervix," J.A.M.A., vol. 138, No. 1, Sept. 1948.

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trated), and "Rheumatic Fever," C. H. Morgan, Ph.D., M.D., D.D.S., Kansas City; "Conservation of the Human Ovary," "The Surgical Diagnosis of Acute Conditions of the Abdomen," and "Early Ambulation of the Surgical Patient," Howard E. Lamb, Denver; "Pilonidal Cyst," Rex Aten; "Diagnosis and Treatment of Glaucoma," H. A. Beckwith, both of San Antonio; "Cranial Technic," Reginald Platt, Houston; "Anorectal Disease," Lester J. Vick, Amarillo.

Dallas County

H. George Grainger, Tyler, and Mr. O. Sam Cummings, past president of Kiwanis International were the speakers at the meeting at Dallas March 10.

District One (Panhandle)

The officers were reported in the February JOURNAL.

The committee chairmen are: Membership, G. Welton Gress; hospitals, Earl H. Mann; convention program, J. Francis Brown; convention arrangements, Ed Rossman; public relations and legislation, L. V. Cradit; vocational guidance, Lester J. Vick; counselor, Mr. John L. McCarty, all of Amarillo; ethics, Horace Emery; statistics, Henry Spivey, both of Lubbock; public health, Paul Roberts, Panhandle; industrial and institutional service, J. Paul Price; clinics, Don Hackley, both of Dumas; osteopathic section, L. N. Pittman, Borger.

District Two

The officers are: President, J. R. Thompson, Fort Worth; president-elect, Sherman P. Sparks, Rockwall; vice president, Charles Still, Jr., Dallas; secretary-treasurer, Lester Hamilton, Fort Worth.

District Four (West Texas)

The officers are: President, Norman Leopold, Odessa; president-elect, John M. Peterson, San Angelo; vice president, Ed Gettins, Odessa; secretary-treasurer, Wiley B. Rountree (re-elected), San Angelo.

Jack Wilhelm, San Angelo, is chairman of the legislative committee.

VERMONT

State Society

Newly appointed committee chairmen are: H. K. Sherburne, Jr., Rutland; vocational guidance, J. H. Blackmer, Randolph.

VIRGINIA

State Society

The program announced in advance for the annual meeting at Williamsburg May 20, 21 included the following: "Psychogenic Factors in Practice" and "The General Practitioner in Osteopathy," Robert B. Thomas, Huntington, W. Va.; "The Cranial Bowl," Howard A. Lippincott, Morristown, N. J.; "Legislation," C. D. Swope, Washington, D. C.; "Diagnosis and Treatment of Heart Conditions" and "The Clinical and Laboratory Evaluation of Hepatic Disease," William Baldwin, Jr., Philadelphia; and a speech by Dewaine L. Gedney, Philadelphia.

WASHINGTON

State Society

See Northwest Osteopathic Convention under Special and Specialty Groups.

WEST VIRGINIA

Parkersburg District

The officers are: President, J. C. Halley, New Martinsville; vice president, Harry L. Myer, Vienna; secretary-treasurer, Joseph C. Robertson, Pine Grove.

CANADA

British Columbia

The officers are: President, M. P. Thorpe, Vancouver; vice president, V. B. Taylor, Victoria; secretary-treasurer, W. C. Atkinson, Vancouver.

Quebec

The officers are: President, A. E. Wilkinson; vice president, W. P. Currie; secretary-treasurer, Fred G. Marshall (re-elected), all of Montreal.

The committee chairmen are: Legislative, Dr. Marshall; vocational guidance, Dr. Currie.

SPECIAL AND SPECIALTY GROUPS

AMERICAN COLLEGE OF NEUROPSYCHIATRISTS

The program announced in advance for the annual meeting at Macon, Mo., July 8, 9 included speeches by G. N. Gillum, Kansas City, Mo.; K. G. Bailey, T. J. Meyers, Ralph I. McRae, all of Los Angeles, and F. E. Dunn, Macon, Mo.

AMERICAN OSTEOPATHIC SOCIETY OF PROCTOLOGY

The officers are: President, Carl S. Stillman, San Diego, Calif.; vice president, John M. Spencer, St. Joseph, Mo.; secretary-treasurer, Arthur O. Dudley, Pasadena, Calif.

Marille E. Sparks, Dallas, Tex., is program chairman.

IOWA CRANIAL ASSOCIATION

Alice Paulsen, Le Mars, demonstrated technic and Faye Kimberly, Des Moines, spoke on the arterial and venous supply to the head at the meeting March 17 at Fort Dodge.

Eye and skin lesions and the treatment of elbow injuries are to be discussed at the meeting in April.

CHILD'S HEALTH CONFERENCE AND CLINIC
(Kansas City, Mo.)

The program announced in advance for the annual meeting at Kansas City April 12-15 included the following: "Painless Childbirth," "Possible Effects of Diet During Pregnancy on the Offspring," "Maternal Oversedation and Its Effects on Fetal Mortality and Morbidity," and "Effect on Future Generations of a New Psychology of Pregnancy and Childbirth," Julian Lansing Mines, III, Long Beach, Calif.; "Clinical Diagnosis of Congenital Cardiac Anomalies," "The Neglect of the Child Following Acute Childhood Diseases," "The Origin and Treatment of Childhood Fears," and "The Diagnosis and Treatment of Rheumatic Fever," Willard E. Bankes, Phoenix, Ariz.; "Nonsurgical Treatment of the Congenitally Cyanotic Child," "Convulsions in Childhood," "Erythroblastosis Fetalis," "The Allergic Child," and "Constipation in Infancy," Leo C. Wagner, Lansdowne, Pa.; "Rheumatic Carditis," "The Three Stages of Nephritis," "Congenital Defects," and "Epidemiology of Tuberculosis," Otterbein Dressler, Philadelphia; "Common Fractures of Children and Their Treatment," (illustrated), Leonard C. Nagel, Kansas City, Mo.; "Mental Phases of Child Development," Floyd E. Dunn, Macon, Mo.; "Atopic Dermatitis Affecting an Infant and Child," Anthony E. Scardino; "Osteopathic Medical Treatment of Common Childhood Diseases," C. H. Morgan; symposium on "Pharmacology of Recent New and Useful Drugs, Vaccines and Antibiotics," Dr. Morgan and Herbert D. Ramsay; "The Problem of Strabismus in Infancy and Childhood," John W. Geiger, all of Kansas City, Mo.

MICHIGAN SOCIETY OF OSTEOPATHIC ANESTHESIOLOGISTS, INC.

A motion picture on the use of pentothal in obstetrics was shown and a speech on curare in anesthesia was given by L. C. Woodley, Detroit, at the meeting at Detroit March 8.

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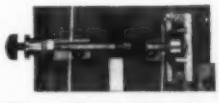

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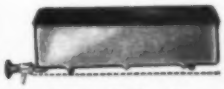

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Caudal analgesia was scheduled for discussion at the meeting at Detroit April 12.

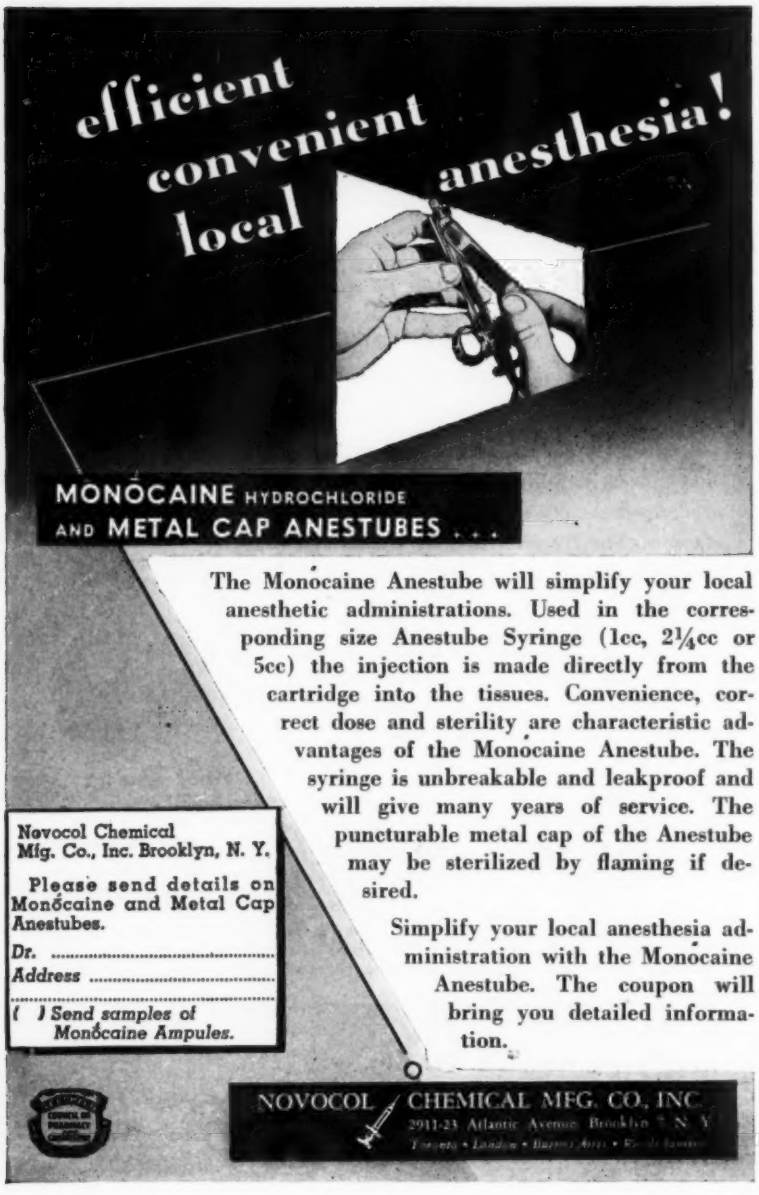
NORTHWEST OSTEOPATHIC CONVENTION

The program announced in advance for the annual meeting June 13-15 at Portland, Ore., included the following: "Arteriosclerosis and Hypertension," Robert P. Morhardt, South Pasadena, Calif., and Randall J. Chapman, Burbank, Calif.; "Care of the Aged and Dying," Dr. Morhardt; "Orthopedic Problems," C. Robert Starks, Denver; "Handling of Industrial Accident Commission Problems," Mr. F. I. Brown, assistant commissioner, Oregon State Industrial Accident Commission; "Relationship of the Dentist and Osteopathic Physician," Arthur G. Swartzenhauer, D.D.S., Portland; "Organizational Affairs," Stephen Pugh, Everett, Wash.

OSTEOPATHIC ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY (Calif.)

The officers are: President, Ward G. DeWitt, Long Beach, president-elect, Preston J. Stack; secretary-treasurer, Jack Pessis, both of Los Angeles.

"Types of Cataracts; Etiology and Medical Care" is to be presented by George Z. Dupont, Glendale, at the meeting at Los Angeles May 23.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PUGET SOUND ACADEMY OF APPLIED OSTEOPATHY

The program announced in advance for the meeting April 20 at Seattle included the following: "Principles and Technic," H. V. Hoover; "Review of an Article by Beryl E. Arbuckle," Margaret Gregory; "Case Diagnosis," Einer Petersen, all of Tacoma; "Intestinal Parasites," Ethel Truax, Everett; "Review of 'Essay on Vertebral Lesions' by Albert E. Guy," Leanna Terry and M. D. Young; "State of the Profession," C. H. Baker, all of Seattle.

State and National Boards

ALASKA

Anyone desiring to take basic science examinations should address the secretary of the Basic Science Board of Examiners, C. Earl Albrecht, M.D., Juneau.

ARIZONA

Basic science examinations June 21 at the University of Arizona, Tucson. Applications must be filed 2 weeks prior to examinations. Address Francis A. Roy, secretary, Basic Science Board, University of Arizona, Tucson.

CALIFORNIA

The officers of the Board of Osteopathic Examiners are: President, Vincent P. Carroll, Laguna Beach; vice president, Troy L. McHenry, Los Angeles; secretary-treasurer, Glen D. Cayler, Los Angeles.

COLORADO

Basic science examinations June 1, 2, Y.M.C.A. Building, Denver. Applications must be filed before May 18. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver.

Professional examinations in July. Address Walter W. King, M.D., secretary, State Board of Medical Examiners, 227 Sixteenth St., Denver 2.

CONNECTICUT

Basic science examinations June 11 at Yale University, New Haven. Applications must be filed 2 weeks prior to date of examination. Address Mr. M. G. Reynolds, executive assistant, State Board of Healing Arts, 250 Church St., New Haven 10.

Professional examinations in July. Address H. W. Gorham, D.O., secretary, Osteopathic Examining Board, Frost Bldg., Norwalk.

DELAWARE

Examinations in July. Address Joseph McDaniel, M.D., secretary, State Board of Medical Examiners, 229 S. State St., Dover.

DISTRICT OF COLUMBIA

Examinations in May. Address George C. Ruhland, M.D., secretary, Commission on Licensure, Room 6150, East Municipal Bldg., 300 C. St., N.W., Washington, D. C.

FLORIDA

Basic science examinations June 11 at the University of Florida, Gainesville. Applications must be filed before May 30. Address M. W. Emmel, D.V.M., secretary, State Board of Examiners in the Basic Sciences, University of Florida, Gainesville.

Professional examinations June 26, 27 at St. Petersburg. Applications must be filed 14 days prior to date of examination. Address Richard S. Berry, D.O., secretary, Board of Osteopathic Medical Examiners, 617-18 Times Bldg., St. Petersburg 5.

GEORGIA

Examinations in July. Address R. E. Andrews, D.O., secretary, State Board of Osteopathic Examiners, 304 First National Bank Building, Rome.

HAWAII

Examinations in July. Address Mabel A. Runyan, D.O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Ave., Honolulu 30.

IDAHO

Examinations in June. Applications must be filed 15 days prior to date of examination. Address Estella S. Mulliner, director, Bureau of Occupational License, Dept. of Law Enforcement, Boise.

ILLINOIS

Examinations June 28-30 at Chicago. Address Mr. Fred W. Ruegg, Supt. of Registration, Illinois Department of Registration and Education, State House, Springfield.

INDIANA

Examinations June 21-23. Address Paul R. Tindall, M.D., secretary, Board of Medical Registration and Examination, 20 N. Pike St., Shelbyville.

IOWA

Basic science examinations in August. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids.

KANSAS

Examinations June 16-18 at Topeka. Applications must be filed 30 days prior to date of examination. Address Forrest H. Kendall, D.O., secretary, State Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

MAINE

Examinations June 14, 15 at the State House, Augusta. Address Albert E. Chittenden, D.O., secretary, Board of Osteopathic Examination and Registration, 50 Goff St., Auburn.

MARYLAND

Examinations in June. Address Walter H. Waugaman, D.O., secretary, State Board of Osteopathic Examiners, 33 S. Centre St., Cumberland.

MASSACHUSETTS

Examinations in July. Applications must be filed 2 weeks prior to date of examination. Address George Schadt, M.D., secretary, Board of Registration in Medicine, State House, Boston 33.

MINNESOTA

Basic science examinations June 7, 8 at Minneapolis. Address Raymond Bieter, M.D., secretary, State Board of Examiners in the Basic Sciences, 126 Millard Hall, University of Minnesota, Minneapolis 14.

George F. Miller, St. Paul, was reappointed to the Board of Osteopathic Examiners for a 5-year term.

MISSISSIPPI

Examinations June 21, 22 at Jackson. Applications must be filed 10 days prior to date of examination. Address Felix J. Underwood, M.D., secretary, Board of Health, Jackson.

MISSOURI

Examinations in June at Kansas City and Kirksville Colleges. Address F. C. Hopkins, D.O., secretary, State Board of Osteopathic Registration and Examination, 203 S. 6th St., Hannibal.

NEVADA

Examinations in July. Address Walter J. Walker, D.O., secretary, Board of Osteopathic Examiners, 15 Saviers Bldg., Reno.

The officers of the Board are: President, Walter L. White, Reno; vice president, Earl H. Reed, Las Vegas; secretary-treasurer, Walter J. Walker, Reno.

NEW JERSEY

Examinations June 21. Address E. S. Hallinger, M.D., secretary, Board of Medical Examiners, 28 W. State St., Trenton.

NEW MEXICO

Basic science examinations August 7. Address Miss Marguerite Kilkenny, Assistant Secretary of State, Secretary of State's Office, Santa Fe.

NEW YORK

Examinations June 28-July 1 at Albany, Buffalo, New York, and Syracuse. Applications must be filed by June 10. Address Jacob L. Lochner, Jr., M.D., secretary, Board of Medical Examiners, Bureau of Professional Education, 23 South Pearl St., Albany 7.

NORTH CAROLINA

Examinations in July. Address Frank R. Heine, D.O., secretary, Board of Osteopathic Examination and Registration, 910 Southeastern Bldg., Greensboro.

NORTH DAKOTA

Examinations in July. Address M. M. Kemble, D.O., secretary, State Board of Osteopathic Examiners, 6-10 Kresge Block, Minot.

OREGON

Basic science examinations June 18 at Lincoln High School, Portland. Applications must be on file before June 1. Address Charles D. Byrne, Ph.D., secretary, State Board of Higher Education, Eugene.

Professional examinations in June. Applications must be filed 15 days prior to date of examinations. Address Mr. Howard I. Bobbett, executive secretary, 608 Failing Bldg., Portland.

PUERTO RICO

Examinations in September at San Juan. Applications must be filed 3

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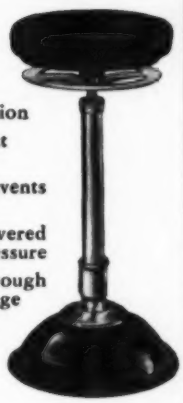

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* 1. Cannon, A. Benson, and McRae, Marvin E.: Treatment of Scabies, J.A.M.A. *138:*557 (Oct. 23) 1948.

2. Wooldridge, W. E.: The Gamma Isomer of Hexachlorocyclohexane in the Treatment of Scabies, J. Invest. Dermat. *10:*363 (May) 1948.

3. Niedelman, M. L.: Treatment of Common Skin Diseases in Infants and Children, J. Pediat. *32:*566 (May) 1948.

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RHODE ISLAND

Basic science examinations in August. Applications must be filed 15 days prior to examination. Professional examinations in July. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 306 State Office Bldg., Providence.

SOUTH CAROLINA

Examinations in June. Address M. V. Huggins, D.O., secretary, State Board of Osteopathic Examiners, 208 Carolina Life Bldg., Columbia 56.

SOUTH DAKOTA

Basic science examinations June 3, 4 at University of South Dakota School of Medicine, Vermillion. Address Gregg M. Evans, Ph.D., secretary, Basic Science Board, Yankton College, Yankton.

TENNESSEE

Basic science examinations July 8, 9 at Memphis. Address O. W. Hyman, M.D., secretary, Board of Basic Science Examiners, 874 Union Ave., Memphis.

TEXAS

Examinations June 16-18 at Austin. Applications should be filed by June 6. Address M. H. Crabb, M.D., secretary, State Board of Medical Examiners, Medical Arts Bldg., Fort Worth.

VERMONT

Examinations June 22, 23 at the State House, Montpelier. Applications must be filed by June 15. Address Charles D. Beale, D.O., secretary, Board of Osteopathic Examinations and Registration, Mead Bldg., Rutland.

WASHINGTON

Examinations in July. Applications must be filed 2 weeks prior to date of examination. Address Mr. George C. Starlund, acting director, State Department of Licensure, Olympia.

WEST VIRGINIA

Examinations June 15, 16 at the Daniel Boone Hotel, Charleston. Address T. H. Lacey, D.O., secretary, Board of Osteopathy, 709½ Market St., Parkersburg.

WISCONSIN

Examinations June 28 at Milwaukee. Address C. A. Dawson, M.D., secretary, State Board of Medical Examiners, River Falls.

WYOMING

Examinations June 6, 7 at State Capitol, Cheyenne. Address G. M. Anderson, M.D., secretary, State Board of Medical Examiners, State Capitol, Cheyenne.

ONTARIO

Examinations at Toronto the week of June 6. Applications will be accepted up to June 1. Address George A. DeJardine, D.O., secretary, Board of Regents; Drugless Practitioners Act, 12 King St., E., Toronto.

RE-REGISTRATION OF OSTEOPATHIC LICENSES

Before June 30—Delaware, $10.00. Address Joseph McDaniel, M.D., secretary, Board of Medical Examiners, 229 S. State St., Dover.

June 30—Virginia, $1.00. Address K. D. Graves, M.D., secretary, State Board of Medical Examiners, Medical Arts Bldg., Roanoke.

July 1—Idaho, $2.00. Address Estella S. Mulliner, director, Bureau of Occupational Licence, Dept. Law Enforcement, Boise.

July 1—within period of 60 days following—Indiana, $5.00 for residents; $10.00 for non-residents. Address Paul R. Tindall, M.D., secretary, State Board of Medical Registration and Examination, 20 N. Pike St., Shelbyville.

July 1—Kansas, $5.00. Address Forrest H. Kendall, D.O., secretary, State Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

July 1—Michigan, $1.00. Address Harry F. Schaffer, D.O., secretary, State Board of Osteopathic Registration and Examination, 1375 Penobscot Bldg., Detroit 26.

July 1—North Dakota, $3.00. Address M. M. Kemble, D.O., secretary, State Board of Osteopathic Examiners, 6-10 Kresge Block, Minot.

July 1—Oklahoma, $2.00. Address Kendall Rogers, D.O., secretary, Board of Osteopathy, 804 First Natl. Bank Bldg., Oklahoma City, 2.

July 1—Tennessee, $5.00 to State Licensing Board for the Healing Arts and $1.00 to the Osteopathic Board. Both fees are payable to the Osteopathic

Board. Address M. E. Coy, D.O., secretary, State Board for Osteopathic Physician's Examinations and Registration, 1226 Highland Ave., Jackson.

EXAMINATIONS BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary, and the completed application blank together with a passport photograph and check for the part or parts to be taken, must be in the Secretary's office by the November 15, or April 15, preceding examination. Part III of the examination will be given in specific locations at the discretion of the Board for the convenience of the applicant.

Examinations in Part I consist of anatomy, physiology, pathology, chemistry, and bacteriology. Part II consists of examination in mental diseases, surgery, obstetrics and gynecology, pediatrics, public health, osteopathic theory and practice. Part III is an oral examination.

Address John E. Rogers, D.O., secretary, 16 Mount Vernon Street, Oshkosh, Wisconsin.

NEGRO HEALTH WEEK AND THE HEALTH OF THE NEGRO

By Surgeon General Leonard A. Scheele
Public Health Service, Federal Security Agency

Thirty-five years ago, Booker T. Washington inspired many public and private agencies to join forces in an effort to improve the health of the Negro people. Both Negro and white groups responded to Doctor Washington's leadership. An important feature of this cooperative effort was National Negro Health Week. Everyone concerned knew that health education was essential. School teachers, school children, and parents needed to learn the principles of healthful living. Families, church and civic groups, whole communities needed to learn the value of good health services.

National Negro Health Week was planned as a rallying point for all groups and agencies interested in health education. About 20 years ago, however, the leaders of National Negro Health Week realized that health cannot be won in a week. Many participating groups now carry on year-round activities. The goal of the future should be to make health education a year-round, community-wide program.

In 1949 as in past years, National Negro Health Week commemorated the April birthday, of a great leader, Doctor Washington. It served also as a time of stock-taking and of renewing efforts for better health in the coming year. Great strides have been taken in public health progress throughout the country during the past 35 years. All races, all groups can take pride in that progress. State and local health services, supported from tax-funds, have been strengthened and expanded. The voluntary agencies, supported by all races, have made great contributions to public health.

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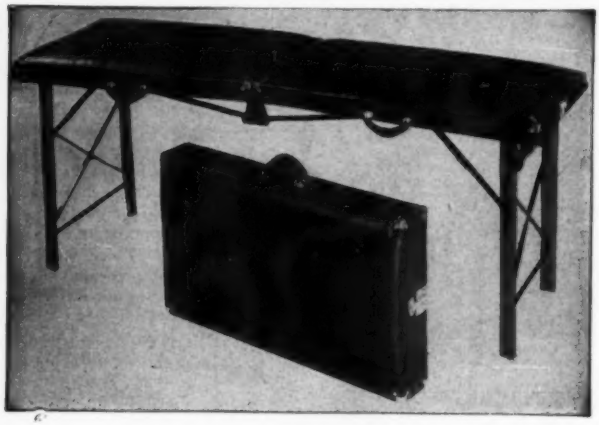

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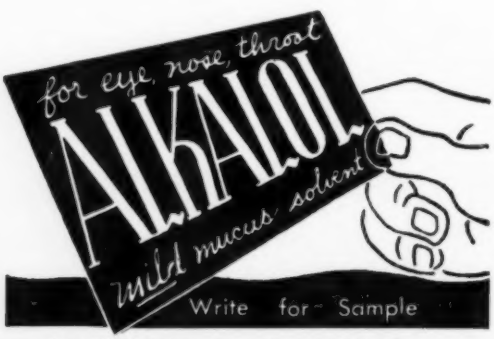

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Progress in Negro health has been especially encouraging. The Negro death rate has been reduced from 20.2 per thousand in 1915 to 11.1 in 1946. In 1915, more than 180 in every thousand Negro babies died before they were one year old. That shocking figure also has been reduced. In 1946, the Negro infant death rate was 48.8 in every thousand born alive. Tuberculosis and syphilis—major killers among Negroes—also have notably declined as causes of death.

The battle for Negro health is far from won, however. The gap has been narrowed between white and Negro death rates; but Negroes still die in larger numbers, proportionately, than whites from diseases we know how to prevent or cure. Negro mothers and infants still have much higher death rates than whites. And Negroes have a life expectancy at birth almost 10 years shorter than their white fellow-citizens.

Year by year, we will come nearer to that goal of better health for all the people—Negroes no less than other races. Better hospital and health facilities will be made available throughout the country. Better local health services will be provided. More physicians, dentists, and nurses—especially more Negro professional workers—must be trained and given opportunities to provide modern health services.

The programs of the Federal Security Agency are geared to improve the health and educational opportunities of the Negro people. The Public Health Service, a constituent of the Agency, is proud to have played a part in the Negro health movement. For many years, both the Public Health Service and the Children's Bureau have worked with Negro leaders and other agencies to improve Negro health. All of us in the Federal Security Agency expect each year to show some further improvement, and we will work wholeheartedly toward that end.

The theme announced for National Negro Health Week of 1949 was: "Cooperate with your health agencies and your neighbors for better health and sanitation in your community." That challenge suggests the following year-round efforts:

Use the services provided by your state and local health departments and voluntary agencies. Attend the clinics and well-baby conferences. Follow the advice of physicians and nurses to prevent disease and protect health. Carry out the recommendations of sanitarians for sanitation in homes, schools, business, and other public places. Study the health problems of Negroes in your communities. See to it that Negro leaders have a place on committees to plan and promote community-wide health.

If each group participating in National Negro Health Week carries out those suggestions, I am sure that 1949 will be a year of better health for thousands of Negro men, women, and children.

NEW OCCUPATIONAL ABSTRACT

A new Occupational Abstract, *Osteopathy*, written by H. Alan Robinson, has just been published by Occupational Index, Inc., New York University, New York 3, N. Y. This six-page leaflet contains vocational information useful to the counselor and the student and is available for 50 cents a copy, cash with order, from the publisher.

Information is included on the nature of the work, future prospects in the field, personal qualifications and preparation needed, number and distribution of workers, methods of entrance and advancement, women in the work, earnings, advantages, and disadvantages. A statement is made concerning legal recognition of this branch of medicine. Also included are an appraisal of the available literature and a brief bibliography.

CHANGE OF ADDRESS AND NEW LOCATIONS

Albarian, Edward L., from Mecca, Calif., to 706 S. Hill St., Los Angeles 14, Calif.

Almquist, Richard T., from 510 Leonhardt Bldg., to 400 N. W. 23rd Road, Oklahoma City 3, Okla.

Bagnall, David J., KCOS '48; 2638 13 Ave. North, Renton, Washington

Barden, George A., from 643 E. Alisal St., to 56 Hebbron St., Salinas, Calif.

Barlow, Alfred M., from 827 First Huntington Natl. Bank Bldg., to 523½ Sixth St., Huntington 1, W. Va.

Boyd, Nathaniel W. III, PCO '48; West Side Osteopathic Hosp., 1253 W. Market St., York, Pa.

Breese, A. O., from 14900 Detroit Ave., to 1392 Gladys Ave., Lakewood 7, Ohio

Calabrese, Michael A., KC '49; Blackwood Clinic & Hospital, Comanche, Texas

Chadderton, Harold, from Logan, W. Va., to 4550 N. 13th St., Philadelphia 40, Pa.

Conley, Leo R., from 50 E. Broad St., to 114 W. Third Ave., Columbus 1, Ohio

Connelly, Joseph W., PCO '48; 1760 W. 49th Place, Denver 11, Colorado

Conrad, Ernest C., from St. Louis, Mo., to Box 174, Fillmore, Mo.

Crawford, M. Alexander, from Apache, Okla., to 838 Bridge St., Albuquerque, N. Mex.

Daniels, Lester R., from 307 Forum Bldg., to 1220 25th St., Sacramento 16, Calif.

Daniels, Roger C., from 307 Forum Bldg., to 1220 25th St., Sacramento 16, Calif.

Daniels, William L., from Millinocket, Maine, to Sherman Mills, Maine

Devereaux, Albert K., from 6317 Eastern Ave., to 7115 Eastern Ave., Bell Gardens, Calif.

Dickey, C. E., from Eufaula, Okla., to 948 Balboa Drive, Arcadia, Calif.

Dozier, Thomas C., DMS '49; Muskegon Osteopathic Hospital, Third & Webster Streets, Muskegon, Michigan

Duncan, John W., from 3219 N. First Ave., to 2816 N. Stone Ave., Tucson, Ariz.

Dunning, J. J., from Paris, France, to Dept. of State Mail Room, E. C. A.-O. R. C. Paris, France, Washington, D. C.

Eilenfeldt, R. L., from 22200 Michigan Ave., to 941 Howard Ave., Dearborn, Mich.

Evans, Lovie May, from El Paso, Texas, to 416 Pierce Ave., Houston 3, Texas

Fischer, Frederick W., from Bloomfield, N. J. to 85 W. Main St., Bergenfield, N. J.

Georgeson, Menas E., DMS '48; 1256 Scotten Avenue, Detroit 9, Michigan

Gerlach, M. S., from Detroit, Mich., to 868 Oakglade Ave., Monrovia, Calif.

Giddings, Helen Marshall, from 402 The Arcade, to New Amsterdam Hotel, Euclid Ave. & 22nd St., Cleveland 15, Ohio

Green, Fred C., from 619 Center St., to Box 377, Alva, Okla.

Grinnell, Leonard J., from Leslie, Mich., to 8609 Lake St., Box 106, Port Austin, Mich.

Hammack, Boyd E., from 417 W. Las Tunas Drive, to 107-09 S. San Gabriel Blvd., San Gabriel, Calif.

Hartwell, Elbert E., from Box 2424, to 1339 Colonial Circle, Salt Lake City 5, Utah

Hazzard, Donald G., from 607 N. Edgefield St., to 1827 S. Edgefield St., Dallas 8, Texas

Herrick, R. B., from Meadville, Pa., to Bashline-Rossman Hospital, Cor. Pine & Center Sts., Grove City, Pa.

Hesse, W. N., from 1913 Lea Crest Drive, to 1827 S. Edgefield St., Dallas 8, Texas

Hoard, Thomas H., Jr., from 501 W. Gandy St., to Denison Osteopathic Hospital & Clinic, 215 W. Sears Street, Denison, Texas

Ivins, J. Leonard, Chester, Pa., to 1579 Chichester Ave., Linwood, Pa.

Kleederman, Allan N., from Brooklyn, N.Y., to Los Angeles County Osteopathic Hospital, 1100 N. Mission Road, Los Angeles 33, Calif.

Klein, Erle Lyle, from Portland, Ore., to Eugene Auto & Trailer Court, Eugene, Ore.

Kovner, Leonard L., from 4759 Hollywood Blvd., to 4922 Hollywood Blvd., Los Angeles 27, Calif.

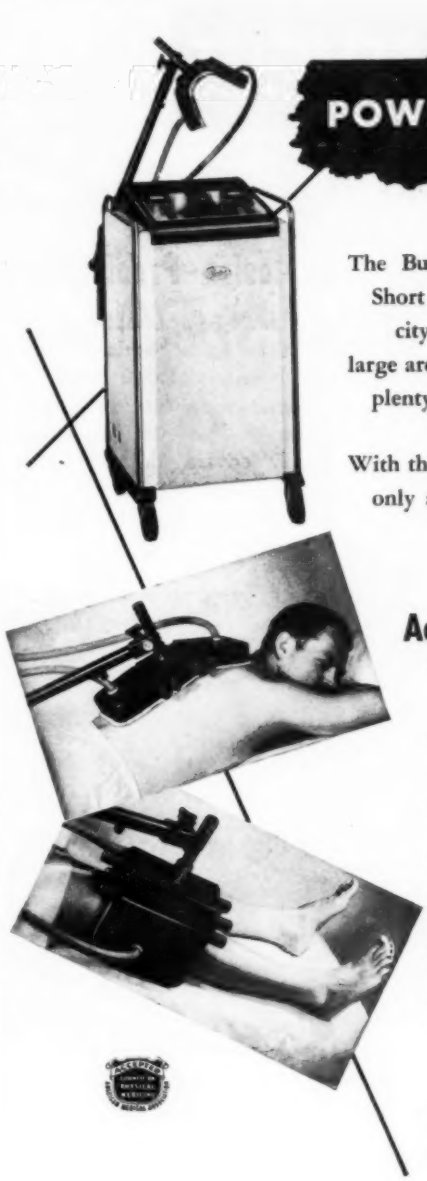
Lauffer, Warren G., from Columbus, Ohio, to 1527 Wayne Ave., Dayton 10, Ohio

Lincoln, Clara B., from 82 Baynes St., to 92 Parkdale Ave., Buffalo 13, N. Y.

Littlefield, Don C., from 5510 E. Second St., to 509-10 Heartwell Blvd., 19 Pine Ave., Long Beach 2, Calif.

Lorentson, Lennert L., from Borger, Texas, to Riverside Osteopathic Hospital, 165 George St., Trenton, Michigan

MacNaughton, H. A., from 1369 Plainfield, N. E., to 1565 Plainfield Ave., N. E., Grand Rapids 5, Mich.



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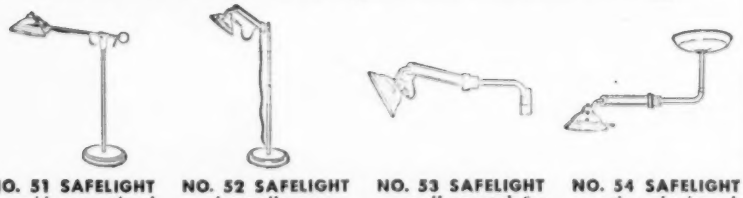

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Moore, George Erle, from Greeley, Colo., to Weisbrod Memorial County Hospital, Eads, Colo.
Moore, K. Lyle, from Stockton, Calif., to Jackson, Amador County, Calif.
Morgan, Clayton H., KC '49; 2105 Independence Avenue, Kansas City 1, Mo.
Morris, John J., from Wilkes-Barre, Pa., to Benton, Pa.
Penner, Robert C., from Los Angeles, Calif., to 11230 Magnolia Blvd., North Hollywood, Calif.
Pettit, Robert L., DMS '49; 3410 Ravina Drive, Des Moines, Iowa
Reder, Robert R., from Chicago, Ill., to 401 W. State St., Geneva, Ill.
Richardson, Martyn E., from Pauls Valley, Okla., to Maysville Clinic, Maysville, Okla.
Riley, Alice, from Des Moines, Iowa, to Fort Worth Osteopathic Hospital, Inc., 1402 Summit Ave., Fort Worth 3, Texas
Roberts, Glenn, from 110 W. Baltimore Ave., to Willow Run Farm, Rose Tree Road, Media, Pa.
Roop, George B., from Cyril, Okla., to Box 156, Canton, Okla.
Rowell, Homer A., from 315 W. Tenth St., to Box 1226, Lancaster, Calif.
Ruffo, Michael M., from 416 S. Spring St., to 1306 Angelina St., Los Angeles 26, Calif.
Shaffer, James R., from Mason City, Iowa, to Box 30, Mountain View, Mo.
Shaft, Robert C., from Lansing, Mich., to General Osteopathic Hospital, Weston, W. Va.
Shild, Tobias, from Philadelphia, Pa., to 6259 W. Fort St., Detroit 9, Mich.
Steinberg, Milton S., from 926 E. 11th St., to 2105 Independence Ave., Kansas City 1, Mo.
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THE PHARMACOLOGICAL BASIS OF THERAPEUTICS. By Louis Goodman, M.A., M.D., Professor of Pharmacology, University of Utah School of Medicine, Salt Lake City, Utah, and Alfred Gilman, Ph.D., Professor of Pharmacology, College of Physicians and Surgeons, Columbia University, New York, New York. Cloth. Pp. 1387, with illustrations. Price $12.50. The Macmillan Co., 60 Fifth Ave., New York City 11, 1948.

ON THE CONTRIBUTIONS OF HUGH OWEN THOMAS OF LIVERPOOL, SIR ROBERT JONES OF LIVERPOOL AND LONDON, JOHN RIDLON, M.D., OF NEW YORK AND CHICAGO TO MODERN ORTHOPEDIC SURGERY. By H. Winnett Orr, M.D., Chief Surgeon, Nebraska Orthopedic Hospital, Lincoln, Nebraska. Cloth. Pp. 253, with illustrations. Price $4.50. Charles C. Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1949.

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POSTTRAUMATIC EPILEPSY. By A. Earl Walker, M.D., Formerly, Professor of Neurological Surgery, University of Chicago, Chicago, Illinois, Now, Professor of Neurological Surgery, The Johns Hopkins University, Baltimore, Maryland. Cloth. Pp. 86, with illustrations. Price $2.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1949.

PUBLIC HEALTH IN THE WORLD TODAY. Edited by James Stevens Simmons, Brigadier General, U. S. Army, Retired; Dean, Harvard School of Public Health. Assistant Editor, Irene M. Kinsey. Cloth. Pp. 332, with illustrations. Price $5.00. Harvard University Press, 2 Randall Hall, Cambridge 38, Mass., 1949.

FUNDAMENTAL CONSIDERATIONS IN ANESTHESIA. By Charles L. Burstein, M.D., Chief, Department of Anesthesiology, Hospital for Special Surgery, Attending Consultant in Anesthesia, Veterans Administration Hospital, Bronx, N. Y.; Assistant Visiting Anesthetist, Bellevue Hospital, Instructor in Anesthesia, New York University College of Medicine. Cloth. Pp. 153, with illustrations. The Macmillan Co., 60 Fifth Ave., New York City 11, 1949.

A PRIMER OF ELECTROCARDIOGRAPHY. By George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine; Senior Visiting Physician, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic; Visiting Physician, Touro Infirmary, New Orleans, and Travis Winsor, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Southern California Medical School, Director of Nash Cardiovascular Foundation, Hospital of the Good Samaritan; Junior Attending Physician, Los Angeles County Hospital; Junior Attending Physician and Diplomate, Children's Hospital, Cardiac Department, Los Angeles. Ed. 2, thoroughly revised. Cloth. Pp. 245, with illustrations. Price $4.50. Lea & Febiger, Washington Square, Philadelphia, 1949.

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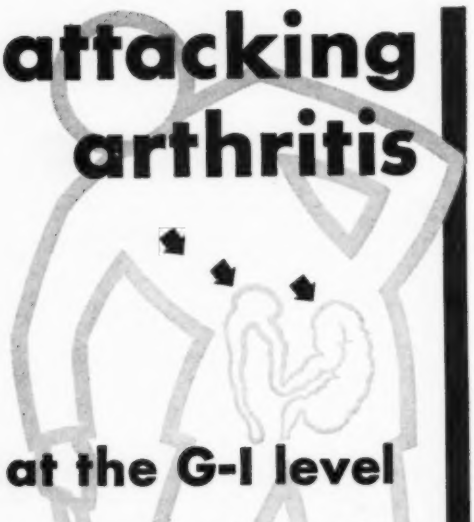

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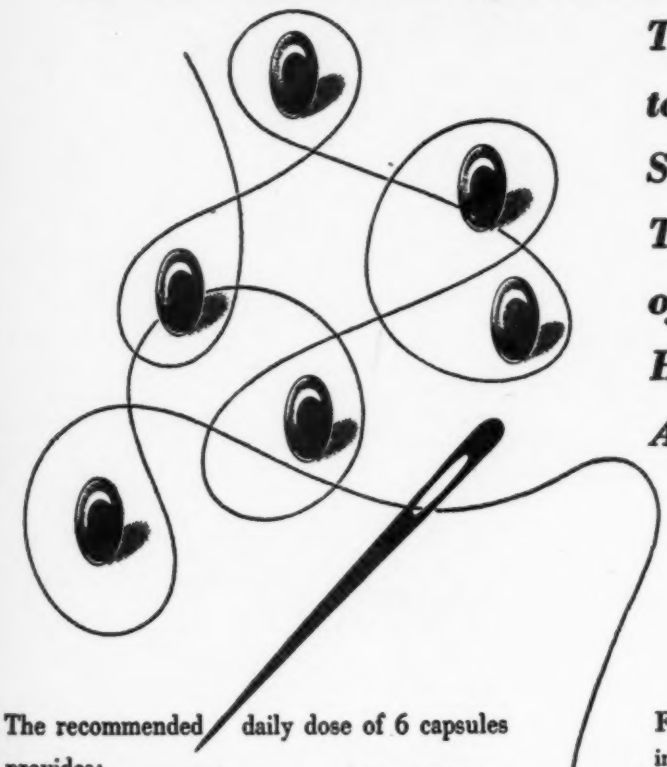

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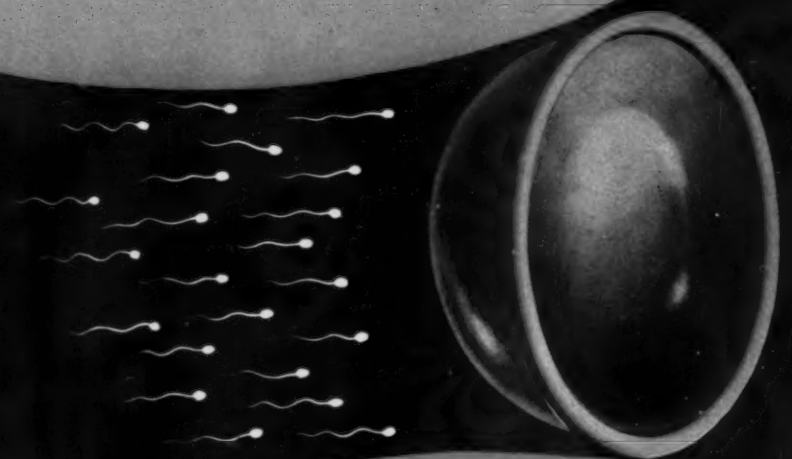
HEMOSULES* 'Warner,' hematinic capsules, are available in bottles of 96 and 250.

*Trade Mark

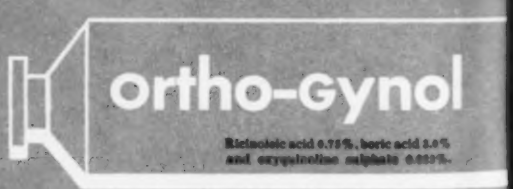
BUFFALO GAP

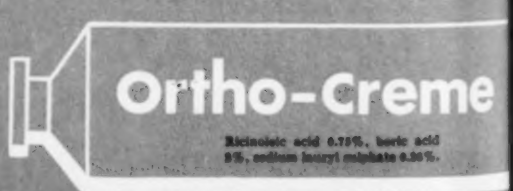
TEXAS

POPULATION 250



Prescribed in Buffalo Gap, Texas, or Baltimore, Maryland, Ortho-Gynol and Ortho-Creme are as readily available as the local pharmacy. Most widely prescribed and most widely used, these preparations are carried in practically every pharmacy in the United States. This almost perfect distribution plus the certainty of action, safety in use and low cost of Ortho products have made control of conception clinically feasible whenever indicated—wherever prescribed.





whenever indicated—wherever prescribed **ortho**

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